Amateur Radio

JOURNAL OF THE WIRELESS INSTITUTE
OF AUSTRALIA
VOL 57, NO 6, JUNE 1989

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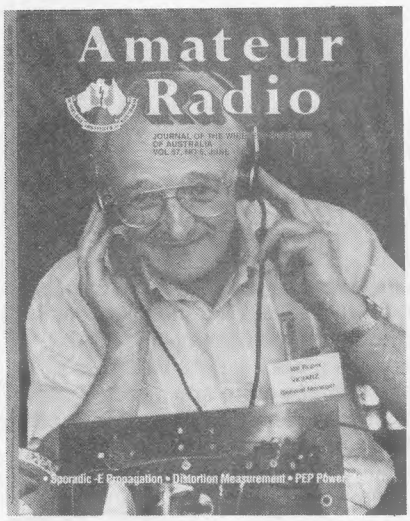
Amateur Radio



Cover

The last thing our General Manager, Bill Roper VK3ARZ wanted, when caught at the Gosford Field Day trying out some ancient "wireless set", was that the picture should appear on the cover of AR! But we felt the photographer George Brzostowski VK1GB, had so aptly captured his expression of nostalgic delight that Bill's protestations should be overruled!

Deadlines

	Editorial	Hamads
July	12/6/89	14/6/89
August	10/7/89	12/7/89
September	7/8/89	9/8/89

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It is impossible for us to ensure the advertisements submitted for publication comply with the Trade Practices Act 1974. Therefore advertisers and advertising agents will appreciate the absolute need for themselves to ensure that, the provisions of the Act are complied with **strictly.**

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All advertisers are advised that advertisements containing only a PO Box number as the address cannot be accepted without the addition of the business address of the box-holder or seller of the goods.

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Material should be sent direct to PO Box 300, Caulfield South, Vic. 3162, in accordance with the deadline date shown on page 1 of this issue.

Acknowledgement may not be made unless specifically requested. All important items should be sent by Certified Mail. The editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

EDITOR'S COMMENT

Sharing The Load

As I have mentioned before, the task of editing and to some extent also producing AR, has become too much for volunteer effort to handle, and we have been seeking a paid part-time Managing Editor to take most of the day-to-day responsibility for the work. With this issue we welcome to the job our new Managing Editor, Graham Thornton VK3IY. Graham's radio career goes back many years, first as an army signaller, then with the Royal Flying Doctor Service, before becoming a maritime Radio Officer and eventually taking out an amateur licence. Graham operates mostly on CW, both ragchewing and DX. Go easy on him until he has tied up all the loose ends in what is a very demanding job! I will continue, as Executive Editor, to be the "Aunt Sally" who collects your complaints, in spite of trying not to give you cause for complaint!

Now that (hopefully!) I can get away from the chair for a month or two, as mentioned back in April, I hope to be once again maritime-mobile in our trailer-sailer on the (not so dry now) salt lakes of South Australia soon.

Not only Lake Eyre (both North and South) but also Torrens (first big filling for over 100 years!) Frome, Callabonna, Blanche, Gregory and maybe even Cadibarrawirracanna! It would be delightful to cruise on that one (with the longest place name in Australia!) and explain to all the DX contacts how we are MM5 Lake Cadibarrawirracanna. Each contact could well take more time spelling the name than anything else! Here's hoping. Incidentally, the meteorologists are by no means sure that all the rain which has filled the lakes can be attributed to the developing "Greenhouse Effect" but the possibility exists, and will become more and more a fact of life on this planet as time goes on. Until we stop burning coal, wood and oil and start planting trees, and for many years after that!

Last month's issue (May) seems to have had a few less problem areas than some of its predecessors, but we do apologise for the centre pages of Convention photographs, in which darkness predominated! There are several reasons for this.

The originals were all colour prints, for which fast processing service can be obtained, as distinct from black and white prints. This caused the black and white half-tones to be darker than expected, particularly on our matt paper.

All of this came about because of our tight schedule to get photos from Convention to print in two days. All part of the learning process, I fear! 73

Bill Rice VK3ABP
Executive Editor
ar

Mobile Phone Ban

Using a hand-held telephone while driving a motor vehicle will be banned in New South Wales from July.

NSW Transport Minister Bruce Baird said the new law was in response to the erratic driving habits and a number of accidents or near-accidents attributed to mobile phone use.

In Victoria it had generally long been an offence to use a phone or two-way radio while mobile.

Mr Baird said his Government hoped those wanting to communicate while on the move will instal hands-free phones in their vehicles.

A definition had yet to be reached for the hand-held phones, but Mr Baird said at this stage it was not proposed to include two-way radios in the ban. ar

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DIVISIONS

Div	Address	Officers			Broadcasts	Fees		
VK1	ACT Division GPO Box 600 Canberra ACT 2601	President Secretary Treasurer	Ted Pearce Jan Burrell Ken Ray	VK1AOP VK1BR VK1KEN	3.570 MHz 2m ch 6950 70cm ch 8525 2000 hrs Sun	(City) Full (F) (City) Assoc (A) (Country) Full (C) (Country) Assoc (T) Pens. (G) Stud. (S) Family (X)	$44.00 $44.00 $44.00 $44.00 $33.00 $31.00 $25.00
VK2	NSW Division 109 Wigram St Parramatta NSW 2124 (PO Box 1066 Parramatta) Phone (02) 689 2417	President Secretary Treasurer	Roger Henley Tim Mills David Horsfall	VK2ZIG VK2ZTM VK2KFU	(R Denotes repeater) Times 1100 and 1930 on Sun 1.845 MHz AM, 3.595 AM/SSB, 7.146 AM (1100 only) 28.320 SSB, 52 120 SSB 52.525 FM 147.000 FM(R) 438.525 FM(R) 584.750 (ATV Sound) Relays also conducted via many repeaters throughout NSW.	F A C T G S X	$41.50 $39.50 $41.50 $39.50 $34.50 $22.50 $24.50
VK3	Victorian Division 38 Taylor St Ashburton Vic 3147 Phone (03) 259 9261	President Secretary Treasurer	Jim Linton Barry Wilton Rob Hailey	VK3PC VK3XV VK3XLZ	1.840 MHz AM, 3.615 SSB, 7.085 SSB, 147.250 FM(R) Mt Macedon 147.225 FM(R) Mt Baw Baw 146.800 FM(R) Mildura 438.075 FM(R) Mt St Leonard 1030 hrs on Sun	F A G S X	$50.00 $45.00 $38.00 $27.00 $27.00
VK4	Queensland Division GPO Box 638 Brisbane Qld 4001 Phone (07) 284 9075	President Secretary Treasurer	David Jones John Aarsse Neil Fittock	VK4NLV VK4QA VK4NEF	3.605 MHz, 7.118, 14.342, 18.132, 21.175, 28.400, 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday Repeated on 3.605 & 147.150 MHz, 1930 Mon	F A C T G S X	$45.00 $45.00 $45.00 $45.00 $36.00 $27.00 $27.00
VK5	South Australian Division Thebarton Rd West Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Secretary Treasurer	Don McDonald Hans van der Zalm Bill Wardrop	VK5ADD VK5KHZ VK5AWM	3.550 MHz, 14.175, 28.470, 53.100, 147.000 FM(R) Adelaide 146.700 FM(R) Mid North 146.900 FM(R) South East ATV Ch 34 579.00 Adelaide ATV 444.250 Mid North (NT)3.555, 146.500, 0900 hrs Sun	F A C T G S X	$44.00 $44.00 $44.00 $44.00 $35.00 $26.00 $26.00
VK6	West Australian Division PO Box 10 West Perth WA 6005	President Secretary Treasurer	Alyn Maschette Pending Pending	 VK6KWN	146.700 FM(R) Perth, at 0930 hrs Sun, relayed on 3.560 MHz, 7.075, 14.110, 14.175, 21.185, 28.485, 52.080, 438.525(R) Country relays 3.582, 147.350(R) Busselton 146.900(R) Mt William (Bunbury) Broadcast repeated on 3.560 at 1900 hrs.	F A C T G S X	$42.00 $42.00 $42.00 $42.00 $35.00 $22.00 $23.00
VK7	Tasmanian Division PO Box 1010 Launceston TAS 7250	President Secretary Treasurer	Mike Wilson Bob Richards Peter King	VK7ZWW VK7NRR VK7ZPK	146.700 MHz FM (VK7RHT) at 0930 hrs Sun relayed on 147.000 (VK7RAA), 146.750 (VK7RNW), 3.570, 7.090, 14.170, 52.100, 144.100 (Hobart) Repeated Tues 3.590 at 1930 hrs	F A C T G S X	$42.00 $42.00 $42.00 $42.00 $38.00 $24.00 $22.00

VK8 (Northern Territory) is part of the VK5 Division and relays broadcasts from VK5 as shown (received on 14 or 28 MHz).
Note: all times are local. All frequencies MHz.

Federal Convention outcome - Questions and answers

The radio society representing nationally the amateur radio service in Australia, the WIA, has now held 53 Annual Federal Conventions to set policy and review how this, the oldest radio society in the world, operates and performs.

These Conventions were a meeting of delegates from the seven WIA Divisions which form a group called the Federal Council. A major change occurred in 1971 when the seven Divisions decided to set up a central Executive and employ a professional manager/ secretary to carry out the day-to-day work and wishes of the Federal Council.

That structure served the interests of the WIA, the Divisions, and the members for many years. However, its operation for at least the last five years has been criticised by the Divisions, those serving on the Executive, and by a succession of Manager/ Secretaries. No one wanted an inefficient structure to continue.

The problem appeared to have two solutions. The first involved the abandonment of the Divisions. This option did not have wide spread support.

The other solution was to restructure the way in which the WIA functioned, and this has been the outcome of the 1989 Federal Convention.

As all members are aware by now, some momentous and far reaching decisions were made by the Federal Council of the WIA at this recent, 53rd Annual Federal Convention.

A lot of discussion has been taking place, both on and off air, about these decisions. Much of this discussion has been constructive and responsible, but some has been ill informed and emotive.

I recently attended, and recorded, an interview between the newly re-elected Federal President of the WIA, Peter Gamble, VK3YRP, and Jim Linton, VK3PC, President of the Victorian Division of the WIA. I am sure that the questions and answers in that interview will be of considerable interest to all members.

Jim Linton....
Peter, what was the general feeling of the WIA Federal Convention in regard to funding for the WIA?

Peter Gamble....
The Divisional representatives saw the need for the WIA to operate on a professional footing. We are dealing with professionals in many organisations, and we need to project a similar image. Also, the WIA is seriously underfunded, and if it is to continue as Australia's national radio society it needs more resources.

Jim....
This really means more money! The Federal component of annual subscriptions will increase by $14.00 making it a total of $47.00! Does the WIA Executive Office really need that amount of funding?

WIA NEWS

Bill Roper VK3ARZ, General Manager & Secretary

Peter....
In the past 20 years, in real money terms, funding has not kept up with inflation. At the Federal Convention this was estimated to mean that the Federal funds were $10.00 behind what they should have been, taking inflation into account. As a result, we are not able to deliver all the services to members that we should be providing.

Jim....
The Federal Convention resolved that there should be uniform fees across all Divisions. Why is this necessary?

Peter...
The uniform funding and fee structure replaces a myriad of different grades and rates of WIA membership across the Divisions. A uniform fee structure will result in a more efficient operation in the Executive Office.

Jim....
Do the Divisions need extra resources and funding?

Peter....
Yes. The additional funding will provide the Divisions with resources to deal with their business in a more professional manner. It is becoming more and more difficult to get suitable volunteers to provide the necessary level of services for members. The Divisions are, and must remain, the contact point for members, potential members, and the general public. And so they need to be readily accessible. The Divisions play a key advocacy role in such local issues as Town Planning and radio masts. Other community based groups are often well organised, well funded, and take a professional approach when lobbying government. To take their place alongside these types of organisations the Divisions need adequate human and financial resources. There are always new challenges and threats against our hobby. We must be prepared to defend the very existence of amateur radio.

Jim....
The bottom line is that the annual membership subscription will be $70.00. Isn't this too much to be a member of a hobby organisation?

Peter....
Consider the $70.00 as being $1.34 a week. This is a small amount when you compare what that will buy in a shop. The WIA is not just a hobby organisation. Our hobby is considered, in some parts of the world, and even by some people here in

Australia, as a non-essential user of the frequency spectrum. Without a strong WIA, this idea could gain momentum and radio amateurs could lose our privileges.

Jim....
Do you think the WIA will lose, say, 20% of its membership through the fee rise?

Peter....
That is a worst case scenario. Of course, we will lose some members for various reasons. However, I believe that, in the coming months, members will see, and understand, the necessity for the increase, and continue to support the WIA, which is supporting them.

Jim....
The WIA has not been too effective in showing some of the benefits of its operations to all radio amateurs. For example, the Customs bylaw exemption, and band-planning.

Peter....
Yes, Jim, that's right. We are supposed to be communicators, but we haven't been doing a good job of communicating the results of our efforts to members. In the case of the Customs bylaw exemption, this has involved the WIA in over five years of complex negotiation with a number of Government departments, and a technical evaluation of each HF, VHF and UHF transceiver being imported into Australia. The result is that import duty is not payable on an amateur transceiver that has been certified by the WIA. This means a saving of about $350 on a typical $1500 to $2000 HF rig. If the DOTC had the job of regulating our use of our bands, like they do in some overseas countries, then you can be sure that that would mean another few dollars added on to the fee amateurs pay each year for their amateur station licence.

Jim....
Does the DOTC really listen to the WIA?

Peter....
In recent years, well prepared submissions to the DOTC have resulted in approval for such things as repeater linking and packet radio. A similar submission, aimed at improving the operating conditions on 50 to 52 MHz, is now before the DOTC, and we are hopeful that it will see greater access to this band segment, particularly in the eastern mainland states of Australia. Negotiations have already started with DOTC to explore the possibility of a new ATV band in the vicinity of 900 MHz to replace the 576 MHz band which was lost in March this year due to government policy and commercial pressure.

Jim....
Fine. Customs bylaw exemption, band-planning, packet radio, repeater linking, 6 metres, and ATV. But these benefit everybody, not just WIA members.

Peter....
You're right. However, I believe that that is the role of a responsible, national, radio society. And as more radio amateurs come to understand, and appreciate, what the WIA is doing for them, membership of our organisation will increase.

AMATEUR RADIO FLYSHEET

Each month, members of the WIA receive the current issue of Amateur Radio magazine in the mail, neatly sealed in a plastic envelope together with the "flysheet" which identifies the magazine as the journal of the WIA, and also displays the address label.

The old style flysheets have now all been used, and your magazine package this month includes one of the new flysheets. Unfortunately, due to an error by the mailing house, a year's supply of this new flysheet was printed in black, and not the requested WIA blue. Needless to say, we are receiving a worthwhile discount for this error.

But it is not only the colour that has changed. Have a look on the back of the flysheet (you didn't really throw it away, did you?).

First of all, there is a section for you to use if you wish to advise this office of your new callsign, your new address, or even if you decide to change your name. Simply fill in the relevant sections and post the complete flysheet to us at the P.O. Box 300 address on the front of the form, and we will amend our records.

One of the neat advantages of this system is that the flysheet will have your current address label on the front, and this will enable us to easily identify who it is that wants to have their details altered in our database. You would be surprised at the odd scraps of paper that arrive in the mail from time to time, advising of a change of details, but without sufficient information for us to identify who it is that wants their membership records changed!

The "Sign up a new member" part of this new flysheet was designed to provide a number of facilities. The most obvious of these is that it is a readily available "application" form for every member to have on hand when he wants to sign up a friend as a member.

It will also enable us to identify who it was that signed up the new member and register them for qualification for "rewards" as part of a membership drive. But more of that in future months.

Another aspect of this new "application" form is the invitation to pay the subscription by credit card. Over 30% of membership renewals are paid by credit card yet, at this time, only one Division is able to provide credit card facilities for a new member. With this facility, the other Divisions will be able to forward the credit card authority to the Executive Office for processing.

One important point I must mention at this point, however. This flysheet "application" form is not a proper application form in the terms of the requirements of the Companies Act and the Articles of Association/Constitutions of the WIA Divisions, but merely an interim form.

As it states on this flysheet "application" form, a full application form will be sent to the applicant for membership as soon as possible.

JOINT DOTC/WIA MEETING...

The most recent Joint Meeting between representatives of the WIA and the DOTC took place in Melbourne on Wednesday, 15th March 1989. The WIA was represented by the Federal President, Peter Gamble, VK3YRP, David Wardlaw, VK3ADW, Brenda Edmonds, VK3KT, and the WIA General Manager.

You may well ask why it has taken so long to publicise the outcome of those discussions. The answer is simple. Under an agreement the WIA has with DOTC, we do not publicise any items discussed until both organisations have agreed that the minutes of

the meeting are correct. The WIA prepared the minutes of this meeting and, although DOTC agreed fully with the minutes as submitted to them for approval, that approval took some time to be advised to us, and occurred just too late to enable us to publish comment in last month's Amateur Radio.

Many items were discussed at this meeting. Here are just a few.

RECIPROCAL LICENSING WITH ITALY

The WIA raised the question, at the request of the VK2 Division, of a reciprocal licensing agreement with Italy. DOTC advised that they saw no reason why the matter should not be pursued, and requested that a formal submission, including details of matching Italian licence grades to Australian licence grades, and the Italian syllabus information, be forwarded to them.

Dotc also advised that they have initiated reciprocal licence discussions with Denmark.

EXEMPTIONS FOR NON-QUALIFIED AMATEURS OPERATING IN ANTARCTICA

For a number of years it has been the practice of DOTC to grant full privilege status to non-qualified Amateurs stationed in Antarctica. This practice was initiated at a time when communications between Australia and our Antarctic bases was not as comprehensive as it is now.

DOTC advised that, at present, no exempt licences are being issued for Antarctica because of the provisions of the Radio Communications Act, and licences are only being issued that are equivalent to the qualifications held by the applicant.

During discussion, DOTC argued that the reasons for the original exceptions licence no longer apply. Concern was also noted about the use of VK0 licences, not only in mainland VK, but also overseas as a portable call, in direct contravention of the conditions under which the VK0 callsigns were issued.

Finally, after DOTC advised that they are not prepared to have the Minister gazette a notice under section 34 (1) of the Radiocommunications Act 1983 to enable continued issue of the exceptions licence for Antarctica, it was agreed the WIA would formally request, in writing to the Licensing Section of DOTC, that Club Station licences be issued for Antarctica in accordance with the guidelines laid down for club operations.

ALTERNATE FREQUENCIES FOR ATV

The WIA asked that consideration be given to allocation of an unshared alternate band to 576 MHz for ATV operation, particularly in the 614 - 620 MHz or 902 - 928 MHz bands.

DOTC advised that the Spectrum Planning Section had looked at this request, and felt it was unlikely to succeed. The vacancy currently existing in part of the 902 - 928 MHz band will probably be used for digital cellular radio, which is not compatible with ATV; and the same pressures that lost amateurs the use of the 576 MHz band would also apply to the 614 - 620 MHz segment.

DOTC suggested that the WIA desire to find a permanent home for ATV may be justification for removing sharing of one of the UHF bands.

The WIA foreshadowed that we intend to proceed with a strong submission for use of a segment of the 902 - 928 MHz band.

FEES FOR DOTC INVESTIGATION OF INTERFERENCE COMPLAINTS

The DOTC explained it appears likely that future interference complaints will be treated in a similar manner to that being used by the UK DTI. Complainants will receive a comprehensive document which will enable them to self analyse where the fault lies; to determine whether the interference results from an internal problem (eg. TV or radio electronic fault), or from external considerations. As with the DTI experience, most complainants are then expected to either go to a serviceman for resolution of the problem, or to their local electricity supply authority (power line interference, etc.).

If the complainant still persists with DOTC, then an up-front fee of $50 - $60 will probably be charged before DOTC personnel investigate.

DOTC explained it appears unlikely at this planning stage that any fee will be charged to the person causing the interference, therefore radio amateurs probably have no cause for concern. They assured us that the WIA would be consulted if there was any change to this thinking.

DISPOSALS NEWS ITEMS ON DIVISIONAL BROADCASTS

The DOTC explained their concern with what they see as a proliferation of advertisements appearing on bulletin boards and packet radio, and expressed the view that DOTC are considering withdrawal of the facility of including disposal news items on WIA Divisional news broadcasts.

The WIA protested strongly, advising that they cannot agree to the withdrawal of this facility from the WIA offical news broadcasts simply because several individual amateurs and radio clubs are contravening the terms of their licences. They maintained that if DOTC is concerned about this, DOTC should police the transgressors. The WIA could assist by publicising the issue.

POOR QUALITY OF CALLSIGN INFORMATION BEING RECEIVED FROM DOTC RECORDS

Again the WIA protested about the poor quality of amateur radio station and callsign information being forwarded monthly to the WIA to update the Call Book database. We explained the many hours of what should be unnecessary work entailed each month by WIA staff because of the poor design of the DOTC database, and the many errors in the information.

DOTC stated they would again take the matter up with the Licensing section.

RESOLUTION 8 - (CLEARANCE OF 18 & 24 MHZ AMATEUR BANDS BY 1/7/1989)

In answer to a question from the WIA, DOTC advised that the 18 and 24 MHz amateur bands would be completely cleared of other Australian stations by the deadline of 1st July 1989.

This is great news for the users of these so-called WARC bands!

AUSTRALIA'S POSITION ON AN AGENDA FOR THE PROPOSED 1992 WARC

The WIA advised of its desire to be involved in the planning for WARC 1992, particularly in respect to expectation of additional UHF bands, and regulatory items such as Third Party Traffic.

DOTC stated that they believe the proposed 1992 WARC will be a limited re-allocation WARC, rather than a general WARC. They believe that it will consist of:-

- a review of frequencies between 1 - 3 GHz, possibly 7 GHz, and 10 - 15 GHz, with particular interests being mobile to satellite, and mobile services;

- HF broadcasting within existing and previously discussed arrangements; and

- allocation of spectrum between 0.5 and 3 GHz for sound broadcasting from satellites.

DOTC further stated that they believe a general WARC will probably not be held sooner than 1999, but suggested that the WIA write to the First Assistant Secretary, International Section of C-Tech Division, requesting information on the planning for WARC 1992.

DEVOLUTION OF AMATEUR LICENCE EXAMINATIONS

DOTC advised that the first devolved examination is not expected to be conducted until early in 1990, and that DOTC expects to conduct all examinations up to and including the February 1990 examinations.

ISSUING OF CALLSIGNS TO VISITORS TO AUSTRALIA IN ACCORDANCE WITH OVERSEAS PRACTICE

The WIA requested that the issuing of callsigns to visitors to Australia be changed to accord with overseas practice, for example "VK3/WA2OAX", rather than the present system of allocating a temporary VK callsign.

DOTC explained that the new "Smiths" computer system used by DOTC will not allow this type of callsign to be issued. However, it was agreed that, in these instances, a "permit" rather than a "licence" could be issued. The matter is to be referred to the Licensing Section of DOTC.

28 MHZ BEACONS

The WIA advised of proposed frequency and mode changes involved in the move to time sharing for 28 MHz beacons, as from 31st December 1989, to accord with the IARU international band plan.

DOTC stated they saw no problems with this, but requested advice in writing of all the proposed changes.

Mr. Peter Gamble
President
Wireless Institute of Australia

I want to congratulate the Wireless Institute of Australia on its initiative in establishing an award for amateur radio communication with the Antarctic continent.

It is fitting that the WIA administer this award, available to amateurs throughout the world, because of Australia's historic involvement in Antarctica and its continuing and varied scientific work there. You have, of course, drawn attention to this by linking the rules of the award with the first two-way radio communication between Antarctica and the outside world by Douglas Mawson's expedition in 1913.

Amateur radio has been enduring force for international understanding ever since its inception, and I extend the best wishes of the Australian Government to the WIA, and to amateurs generally, wherever they may be.

Senator Gareth Evans
Minister for Foreign Affairs & Trade
18th April, 1989

Mr. Bill Roper
General Manager and Secretary
Wireless Institute of Australia
GPO Box 300
CAULFIELD SOUTH VIC 3162
Dear Mr. Roper

Thank you for your letter of 7 February 1989 and the enclosed copy of "Amateur Radio" which I found to be most interesting and informative.

The opportunity to thank you for sending me a copy of your magazine also enables me to tell you that I recognise the significant contribution Amateur radio has made to the field of radiocommunications and to the fostering of international relations. I am also most aware of the valuable assistance provided in times of emergency, and of the continuing help given by Amateurs to community interest groups.

I therefore wish your members every success in the pursuit of this fascinating hobby.

Yours sincerely
Ralph Willis
Minister for Transport & Communications
21 April 1989

WIA ANTARCTIC AWARD

Mention was made on page 34 of last month's issue of Amateur Radio about the new Antarctic Award, the brain child of the Federal Awards Manager, Ken Gott, VK3AJU. Details of this new WIA award are included in Ken's AWARDS column elsewhere in this issue of your magazine, but there are a few other points worth making...

This Antarctic Award is the first regional award to be administered by the WIA. The NZART runs the Worked All Pacific Award, JARL runs the Worked All Asia Award, and there are a number of awards based on Europe and run by national amateur radio

societies in Luxembourg, Germany, etc.. The Worked All Continents award, now rather passe since it is so easy to achieve, assumes that there are 6 continents. Of course, there are 7 continents, the extra one being Antarctica. Perhaps WAC could be revived as a worthwhile achievement by getting the IARU to include Antarctica as an essential part of it? The DXCC award treats all of Antarctica as one country. Amateurs may confirm contacts with stations using US, USSR, Australian, New Zealand and other prefixes, but only one will count towards DXCC. Therefore, this new WIA Antarctic Award may be of some consolation for the DXers who have superfluous QSL cards for contacts with Antarctica.

Shown separately is a copy of a FAX letter received on 1st May 1989 from the Australian Minister for Foreign Affairs and Trade, Senator Gareth Evans. It seems that not only will the new Antarctic Award gain more international recognition for the WIA, but has already won points for us with the Australian Government.

MINISTER FOR TRANSPORT AND COMMUNICATIONS

Only a few days before receiving the FAX from Senator Gareth Evans, we also welcomed a letter from the Minister for Transport and Communications, the Honourable Ralph Willis, MP, which is also shown separately.

Isn't it great that this marvellous, leisure time activity of ours, amateur radio, is receiving such recognition from senior members of the Australian Government.

Bandits Hit Hi-Tech Firms

Heavily armed bandits have made off with computer chips in a number of raids in Orange County, California.

Five such robberies in six months have authorities concerned that a new breed of bandit will strike high-tech firms right across the United States.

In two of the robberies bandits made off with chips worth more than $100,000.

A shopping bag full of megabyte chips is worth $15,000 but new chips with larger capacity can be worth many thousands of dollars each.

Measureme

Synopsis of Types of Distortion and

Over the years, distortion in amplifiers and other electronic devices has been measured by many different techniques. Some of these techniques have changed with the development of modern test equipment using computer-based technology. The old techniques are still valid and utilise test equipment more likely to be available to the radio amateur. In the subsequent paragraphs, techniques, both old and new, will be discussed.

Distortion in any signal processing device (such as an amplifier) can be defined as any output signal component, generated within the device from the input signal, but which is different in form from the original input signal. Distortion is generally classified separately from noise which is generated within the device, independent of the input signal. (For measurement of noise, refer to an article by the writer in *Amateur Radio* November 1985.).

Distortion can be classified under a number of different headings. The most common of these are as follows:

- Frequency or amplitude distortion.
- Harmonic distortion.
- Inter-modulation distortion.
- Phase distortion.

Each of these will be discussed in turn together with methods of measurement. In the discussion, we will refer to the "device under test". This could be an amplifier, or a filter, or any device which transfers analogue signals from its input to its output, including a complete system such as a radio transmitter feeding a radio receiver via a transmission medium.

Frequency or Amplitude Distortion

This distortion is the result of non-constant gain or loss in the signal transfer device over the band of frequencies being used. Measurement of this distortion is more commonly known as frequency response. We might not always classify variable gain or loss as a distortion as we often shape the frequency response for a special purpose, such as in an equaliser or a filter.

Figure 1 illustrates two conventional methods of measuring frequency response. In 1(a), the test equipment used consists of a variable frequency oscillator, a calibrated variable attenuator and a level meter. Measurements are taken at sufficient spot frequencies to construct a response curve. At each spot frequency, the attenuator is adjusted until the meter reads the same for both positions of the switch shown. The gain of the amplifier is then equal to the calibration value on the attenuator. In this

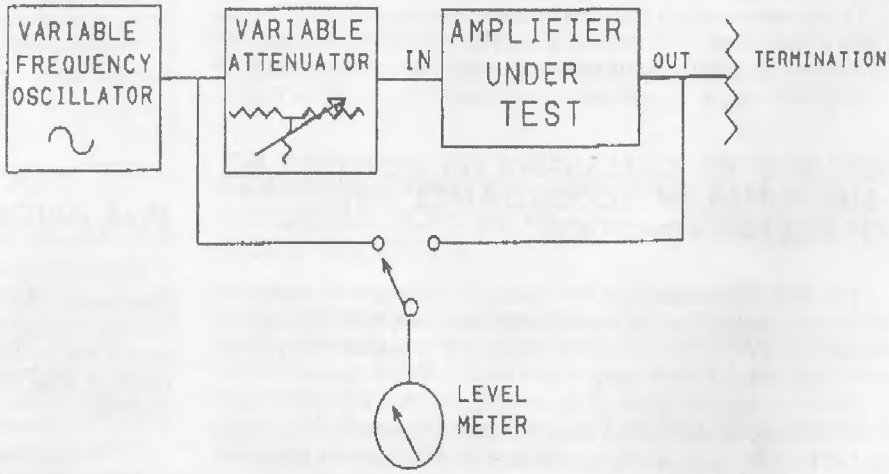

Figure 1a: Methods of Measuring Frequency Response Plotting from Selected Spot Frequencies

ent of Distortion

d how Distortion can be Measured

arrangement, the output resistance of the oscillator must match the input resistance of the attenuator and the output resistance of the attenuator must match the input resistance of the amplifier.

In Figure 1(b), the voltage calibration of a cathode ray oscilloscope (CRO) is utilised to measure input and output signal voltages. At each spot frequency, the voltage gain is calculated from the ratio of output to input voltage and converted to decibel form for plotting the response curve.

Figure 2 illustrates a method of plotting frequency response on a modern spectrum analyser. A sweep generator drives a variable frequency oscillator and a variable bandpass filter which has its centre frequency synchronised to the frequency of the oscillator. The frequency is swept over the band required for the test. The oscillator is fed through the device under test and then through the filter to display output level on the Y axis of a cathode ray tube. The X axis is controlled by the sweep source so that a display of output level versus frequency is obtained. Modern analysers provide a computer bus across which a programmable plotter can be connected. Using this equipment, a permanent record can be automatically obtained.

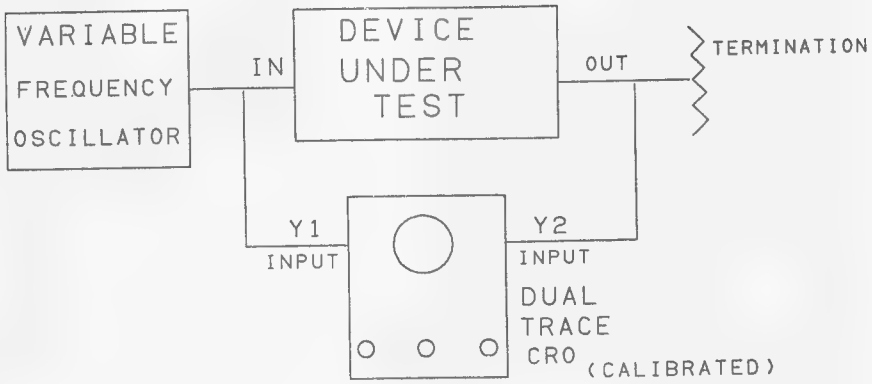

Figure 1b

Another method, shown in Figure 3, is to feed white noise to the input of the device under test. The white noise has a uniform spectrum and hence the noise at the device output has a spectrum which images the response of the device. The output is plot-

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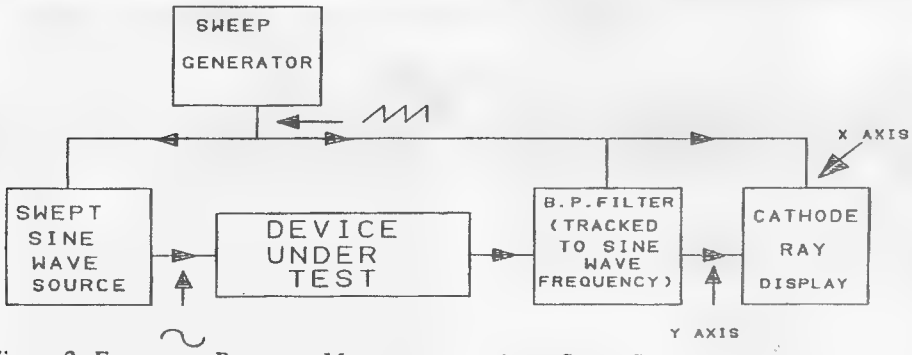


Figure 2: Frequency Response Measurement using a Swept Sine Signal and Spectrum Plot

ted by a spectrum analyser of a dynamic signal analyser (to be discussed later).

Square Wave Testing

One method of assessing frequency response (and sometimes other characteristics) is to feed a square wave to the input of the device under test and examine its output on a CRO. Since the square wave is made up of a fundamental frequency and all odd harmonics, theoretically to infinity, and deficiency within the frequency spectrum, from the fundamental upwards, shows a change in the waveform. The test is subjective rather than precise but gives a good indication of the response.

Typical response patterns taken from a reference source are shown in Figure 4. A further set of examples is shown in Figure 5. The captions under the patterns are self-explanatory. The effect of loss of low or high frequency response is illustrated and to some degree a change in form of the pattern with phase shift. Observe how the ringing is initiated by the steep edge of the square wave in Figure 4(j). The tendency for the tested device to ring might have been less apparent using the test methods previously described with sine waves or white noise.

Related to frequency response, there is another type of specification called "transient response" which is the ability of a device to respond to a step function. "Rise time" is one measure of transient response and is the time taken for the signal, initiated from a step function, to rise from 10 percent to 90 percent of its stable maximum value. Another measure is the percentage of the stable maximum value that the signal overshoots in responding to the step. Figure 6 shows how the square wave, in conjunction with a calibrated CRO, can be used to measure rise time and overshoot.

Rise time is also a measure of the maximum slope of any sine wave component and hence is directly related to the limits in high frequency response. Together, rise time and overshoot define the ability of a device to reproduce transient type signals.

Another specification commonly used in operational amplifiers is the "slew rate" given in volts per microsecond. Such amplifiers have limitations in the rate of change that the output can follow and this is defined by the slew rate. The greater the output voltage, the greater is the rise time and hence the greater the output voltage, the lower is the effective bandwidth. Slew rate is equal to the output voltage step divided by the rise time as measured over the 10 percent to 90 percent points discussed previously. It is an interesting observation that, in specifying frequency response, output voltage should also be part of the specification.

Harmonic Distortion

Harmonic distortion in any signal transmission device results from non-linearity in the device transfer characteristic. Additional frequency components, harmonically related to frequencies fed into the input, appear at the output in addition to the reproduction of the original input components.

Measurement of harmonic distortion can be carried out by feeding a sine wave into the input of the device and separating the sine wave from its harmonics at the output. Distortion is measured as the ratio of harmonic level to the level of the fundamental frequency. This is usually expressed as a percentage but sometimes also expressed as a decibel.

Sine Wave Testing

Subjective testing for harmonic distortion can be carried out by feeding a good sine wave signal into the device under test and examining the device output on a CRO. Quite low values of distortion can be detected in this way.

Some idea of the order of the harmonic can often be determined from the shape of

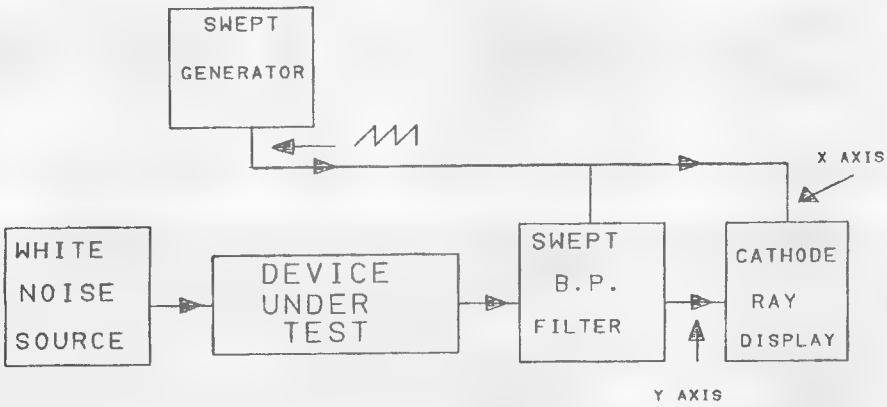


Figure 3: Frequency Response Measurement using a White Noise Source and Spectrum Plot

the waveform. Figure 7 illustrates the formation of a composite waveform from a fundamental frequency and its second harmonic at one-quarter of the fundamental amplitude. Figure 8 illustrates similar formation from a fundamental frequency and its third harmonic, also a quarter of the amplitude. In Figure 8(b), the phase of the harmonic is shifted 180 degrees to that in Figure 8(a), and in Figure 8(c), the phase is shifted 90 degrees to that in (a). The figures show that the composite wave forms can be quite different for different phase conditions making resolution sometimes tricky.

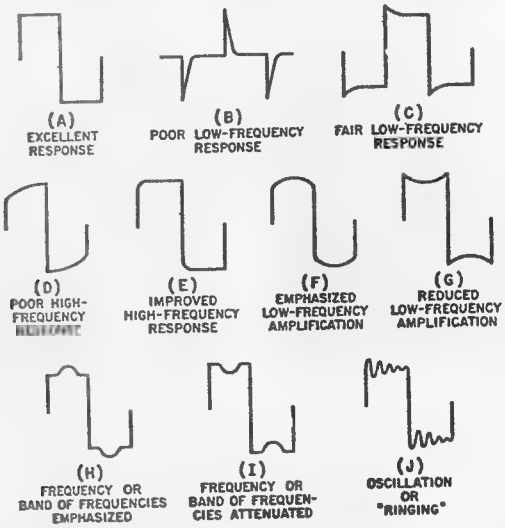


Figure 4: Typical Square-Wave Response Patterns

Some distorted waveforms directly indicate an out of adjustment or incorrect operating condition. The clipped waveform of Figure 9(a) shows the output of an amplifier driven to an overload or saturated condition. Figure 9(b) is clipped in one direction indicating an off-centre setting of an amplifier operating point. Figure 9(c) shows crossover distortion in a Class B amplifier.

Another method of testing, using sine waves, is to feed the monitored device input signal to the X plates input of the CRO and the device output signal to the Y plates input of the CRO. This plots the transfer characteristic of the device, that is, instantaneous output voltage as a function of instantaneous input voltage. A perfect response is indicated by a diagonal line on the screen, or with phase shift, an ellipse or circle. Figure 10 shows various fault waveforms taken from one reference source. the captions are self-explanatory.

Distortion Meters

One type of distortion meter, of early vintage, is illustrated in Figure 11. The input of the device under test is fed with a sine wave source and the device output fed to a vacuum tube voltmeter (VTVM) to record a reference level. The VTVM is then connected via a bridged-T rejection filter which is adjusted to balance out the fundamental frequency. The VTVM now records the level of harmonic components and the ratio of this reading to the first reading, expressed as a percentage, is the percent harmonic distortion. To be precise, the meter actually reads distortion plus noise and noise should be taken into account if the noise level is approaching the level of harmonic component. Figure 12 illustrates the sharpness of the rejection filter and its ability to allow resolution of distortion components nearly 100 dB down. Because of the tunable filter, the instrument can measure distortion using a wide range of fundamental frequencies. Another early type of distortion meter used a fixed oscillator source of 400 Hz and a fixed high pass filter to separate the harmonic components from the 400 Hz fundamental. It had one advantage in rejecting 50 and 100 Hz hum noise components which could be a nuisance if present when using the previous instrument described.

Whilst measurement of total harmonic distortion satisifies a general performance assessment, there is also a need to examine the individual levels of the various harmonic components. an early type of instrument used to separate these components was called a wave analyser. Figures 13 and 14 show a wave analyser of the heterodyne type. The unit operates much like a superheterodyne receiver using a variable frequency oscillator which is heterodyned with the fundamental, or the selected harmonic, to obtain a difference frequency of 50 kHz. The difference frequency is fed through a 50 kHz narrow band crystal filter to reject all other heterodyned components and then coupled to a VTVM for measurement of amplitued. The fundamental and harmonics are selected in turn by adjusting the oscillator frequency so that a composite table of the waveform components can be recorded.

Total harmonic distortion (Dt) can be calculated from the individual harmonic component levels H2, H3, H4, H5 etc, as follows:

$$Dt = \sqrt{(H2^2 + H3^2 + H4^2 + H5^2 + \ldots)}, \text{ etc}$$

Distortion percent = 100.Dt/Vf where Vf = level of fundamental

These early type of of distortion meters and the wave analyser described were

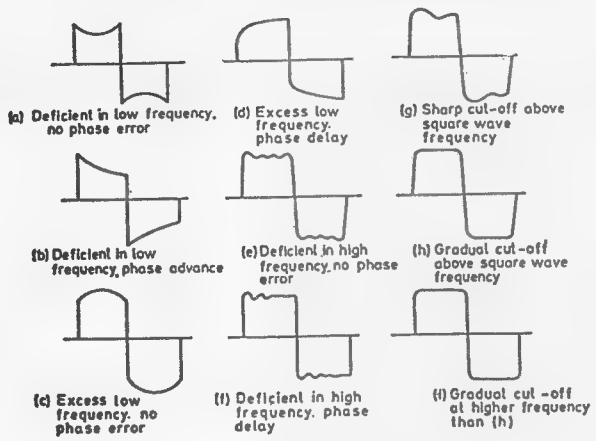


Figure 5: Typical Square-Wave Response Patterns

made essentially for the audio frequency spectrum but there is no reason why the principles involved could not be applied at higher frequencies.

Another method of resolving the individual levels of the fundamental frequency and its harmonics is to display them on a spectrum analyser. Figure 15 shows a modern programmable version of the spectrum analyser made by Hewlett Packard. A typical plot, made on this versatile machine and displaying the various component levels, is shown in Figure 16. Other examples of how this type of machine can display waveform components and also measure frequency response, were published in *Amateur Radio,* September 1987.

A further machine, used to display a composite spectrum, is the Dynamic Signal Analyser, shown in Figure 17. Whilst it can plot a display similar to the spectrum analyser, if functions on a completely different principle. A complex waveform can be resolved into its individual frequency components by a mathematical process called Fourier Analysis. The machine makes use of an internal computing system to achieve this process using an algorithm called Fast Fourier Transform. The machine can carry out a multitude of complex signal processing functions far beyond the scope of this article. Figure 18 shows a spectrum plot, made by the machine, which was set up to measure harmonic distortion. Observe how the harmonics have been separated form the noise components and each flagged on the display by an arrow. The machine has also worked out the total harmonic distortion and printed out its value at the top of the display (THD = -46dB).

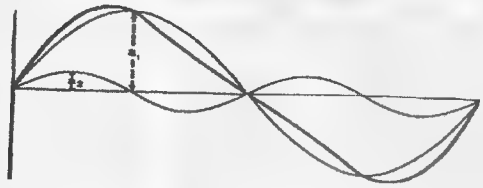


Figure 7: Formulation of Waveform from Fundamental Frequency a1 and Second Harmonic a2

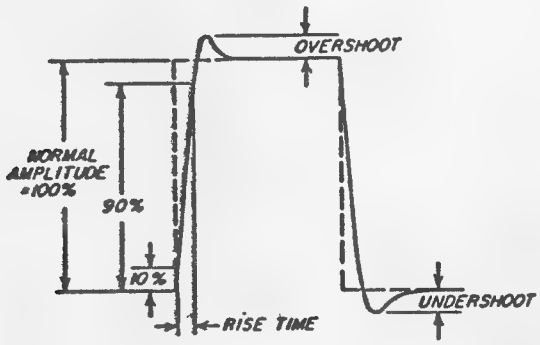


Figure 6: Transient Responses - Measurement of Rise Time and Overshoot

Intermodulaton Distortion

If any form of non-linearity exists in a signal processing device, intermodulation products are generated when two or more individual frequency components are fed through the device. Two individual frequencies generate two additional components equal to their sum and difference frequencies plus, to a lesser extent, more complex products involving harmonics of the two frequencies.

Intermodulation distortion is measured by feeding two different frequency sine waves to the device input and separating out the intermodulation components from the primary frequencies at the output. The relative level of intermodulation components to primary frequencies is a measure of the degree of intermodulation.

A method of measurement is illustrated in Figure 19(a). Two sine wave signals at a frequency within the operating spectrum are fed to the input of the device under test. One signal is a high frequency (fo) and the other is a low frequency (fm). The output of the device is coupled to a calibrated CRO via a high pass filter which rejects the lower frequency (fm). If intermodulation occurs, the CRO displays a typical amplitude modulated waveform in which fm modulates carrier fo. Referring to Figure 19(b), percentage intermodulation equals the ratio of modulation amplitued (Em) to carrier amplitude (Ec), multiplied by 100. This is scaled off from the CRO display, as follows:

Percent intermodulation
= 100.Em/Ec = 100.(b - a)/a

To make the intermodulation easier to resolve, it has been past practice to feed signal fm into the device at four times the level of fo. In audio work, standard frequencies used have been fm = 60 Hz and fo = 3000 Hz.

Another method of measuring the intermodulation distortion is to examine, on a spectrum analyser, the relative levels of either sideband component, (fo + fm) or (fo - fm), relative to fo. for one pair of side frequencies, the distortion is calculated as follows:

Percent intermodulation = 200.Vh/Vfo
or
Percent intermodulation = 200.Vl/Vfo
where Vh and Vl = sideband component levels
and
Vfo = level of fo

Measurement of Phase Shift

Before discussing phase distortion, we will introduce the subject of phase and the means of measuring phase delay of a sine wave through a signal processing device. One method of measurement is to use the

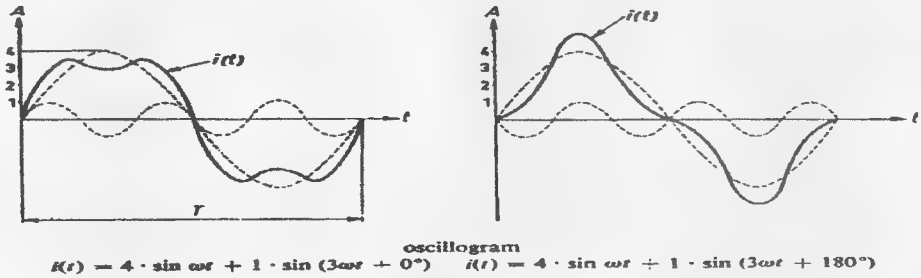


Figure 8: Formation of Waveforms from Fundamental Frequency and Third Harmonic - Diagrams (a), (b), and (c) show Different Phase Relationships between Harmonic and Fundamental

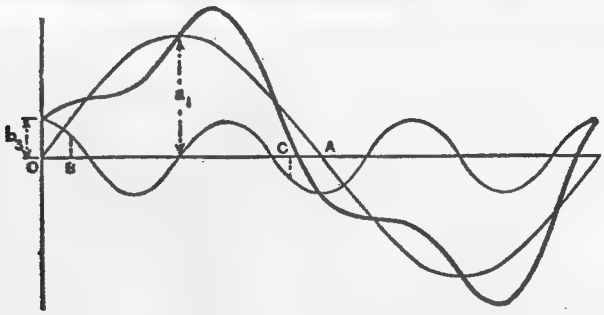


Figure 8c

CRO to obtain what are called Lissajous figures. These are obtained by bridging the input of the device across the X plates input and the output of the device across the Y plates input. This method of connection was also previously discussed under the heading of sine wave testing. Typical Lissajous figures are shown in Figure 20. The phase angle is derived from sine Ø which in turn is equal to the ratio of the Y intercept to the Y maximum (as explained by the diagram).

There are various methods used to directly measure phase. The digital phase meter (Figure 21) is one such example. In this instrument, the two sine wave signals to be compared are first amplified considerably and then clipped to form square waves. The square waves are fed to a three nand gate logic circuit, the output of which is connected to a milliammeter circuit calibrated to read full scale, corresponding to 180 degrees phase shift, when a continuous one is at the logic output. For zero phase shift, the logic output is a continuous zero and the meter reads zero degrees. To understand the logic, carefully examine the waveform timing diagram, Figure 22. For phase differences between 0 and 180 degrees, the average current through the meter is directly proportional to the phase difference and hence the scale of the meter is linear.

Phase Distortion

Transmission circuits and networks with reactive elements almost always introduce different phase delays for different frequencies. There is no problem if there is a linear phase characteristic, ie phase shift is directly proportional to frequency. The ratio of change in phase to change in frequency is given the name of Group Delay (Tg) which is expressed as follows:

$$Tg = \Delta Ø/360\Delta f$$

where $\Delta Ø$ = phase change in degrees and Δf = frequency in Hertz

Variation in group delay over the signal passband is what causes signal distortion and this variation defines the phase distortion. Variation of group delay is not normally a problem in audio circuits but causes degradation of picture quality in video circuits and degradation of demodulated audio quality when present in frequency modulated (FM) signal circuits.

Figure 23 illustrates a response measurement taken on a bandpass filter using a series of amplifier stages with overcoupled double tuned transformers. The gain response looks good but observe the variation in group delay of 35 microseconds over the passband. Actually, this response is quite good and used in a narrow band FM system, produced distortion figures better than 60 dB down in the demodulated audio. This performance could not be achieved with good quality ladder ceramic filters of similar bandwidth. Such filters are notorious for their high ripple response and large variation in group delay over the passband.

Group delay as a function of frequency can be plotted on automated instruments such as the HP 4192A impedance analyser. Group delay can also be measured on the HP Dynamic Signal Analyser but this instrument is limited to frequencies up to 100 kHz. Using more basic test equipment, phase shift can be measured at spot frequencies and a curve plotted of phase versus frequency. Ths slope of the curve (which is actually group delay) is scaled off around sections of the curve and a new curve, of group delay versus frequency, is then plotted.

Sine Squared Pules

We have discussed square wave as a broadband test signal which has frequency components theoretically extending to infinity. For any signal transmission system which has a controlled bandwidth, such as a video circuit, it is more meaningful to use a band limited test signal, If a sine wave half cycle is squared, it forms the pulse shape shown in Figure 24 this pulse is known as a sine Squared Pulse or sometimes a Raised Cosine Pulse. If a train of such pulses have a half amplitude duration (HAD) equal to t and a pulse repetition frequency equal to fr, then a band of component frequencies is generated, commencing at a frequency fr and extending in multiples of fr, with a band limited spectrum as shown in Figure 26. Amplitude of the spectrum falls to half (6 dB) at a frequency equal to 1/(2t) and falls to a null at a frequency equal to 1/t. For a television video signal of 5 MHz bandwidth, values of t = 0.1 microsecond and t = 0.2 microsecond are used with fr equal to line time base frequency.

A method of generating a sine squared pulse is to feed a wide band squared pulse through a Thomson filter (Figure 25) which is specially designed to shape the signal to obtain the sine squared response.

To make use of the sine squared source, the pulse train is fed to the input of the

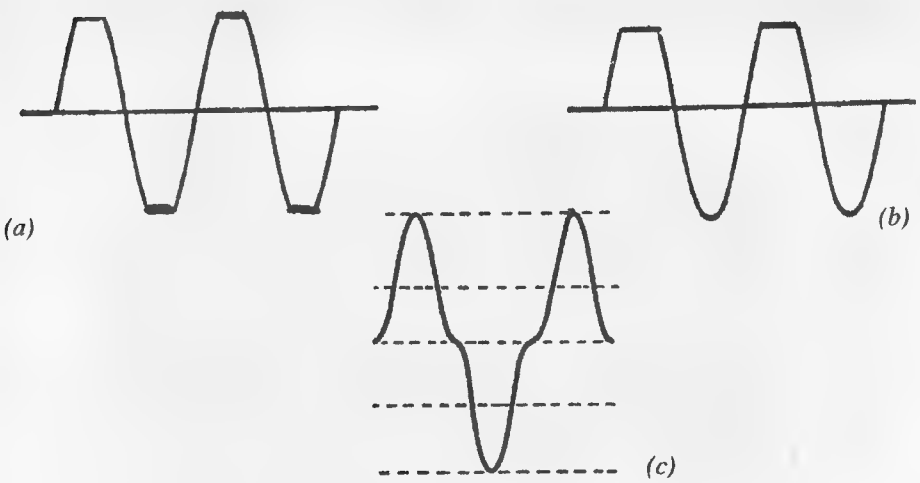


Figure 9: Distortion Waveforms
(a) Amplifier Overdriven
(b) Amplifier Operating Point not Centered
(c) Crossover Distortion in a Class B Stage

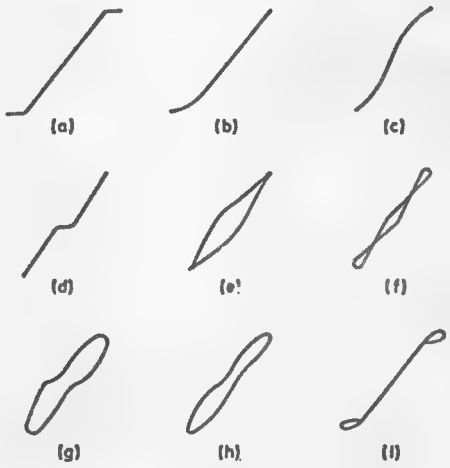
transmission system or device under test and the output examined on a CRO. Figure 27(a) shows the effect on the output when there is a loss of high frequencies accompanied by phase distortion. Figure 27(b) shows loss of high frequencies on its own. Figure 27(c) shows phase distortion on its own. By carefully calibrating the graticule of the CRO screen, limits can be defined on the amount of deviation from the original waveform than can be accepted.

It is not intended that this article should extend into the realms of testing television video circuits although they have been referred to as an application where the sine squared pulse is used. It will be sufficient to say that a great deal of information concerning the bandwidth, low frequency response and linearity of a video signal can be obtained by studying the displayed picture of the standard television test pattern.

The Ultimate Test

We have discussed, at length, various types of distortion, the test equipment used and how distortion is measured. However, it must not be overlooked that the test equipment , whatever level of sophistication, is there to assist the evaluation of operational performance. The ultimate test is how well all the equipment performs and, in a speech communication system, how good does it sound. If the speech quality is good, then the test equipment is put away. If the speech sounds thin, or it lacks highs, or it is muffled and hard to understand, then the test equipment and the knowledge of how to use it, might be needed to find out why.

It is unlikely that the average radio amateur would have access to all of the test equipment discussed in this article. However, it should be apparent from the discussion that a great deal of information on equipment performance can be gained using a simple sine/square wave signal generator and a good CRO.



Distortion measurements using sine wave

Figure 10: Sine Wave Testing with Amplifier Input and Output fed to X and Y Plates of CRO, respectively
(a) Amplifier Overdriven
(b) Anode Bend Distortion in Valve Amplifier
(c) Curvature Distortion
(d) Crossover Distortion in a Class B Output Stage
(e) Magnetising Current Distortion
(f) As (e) with Phase Distortion later in the Chain
(g) As (d) with Phase Distortion earlier in the Chain
(h) As (c) with Phase Distortion earlier in the Chain
(i) As (a) with Phase Distortion later in the Chain

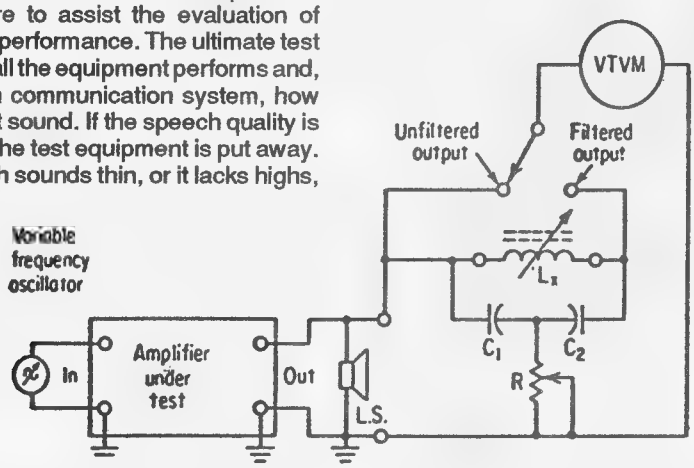


Figure 11: Principle of Harmonic-Distortion Meter, showing Bridged-T Rejection Filter Composed of L, C1, C2 and R.

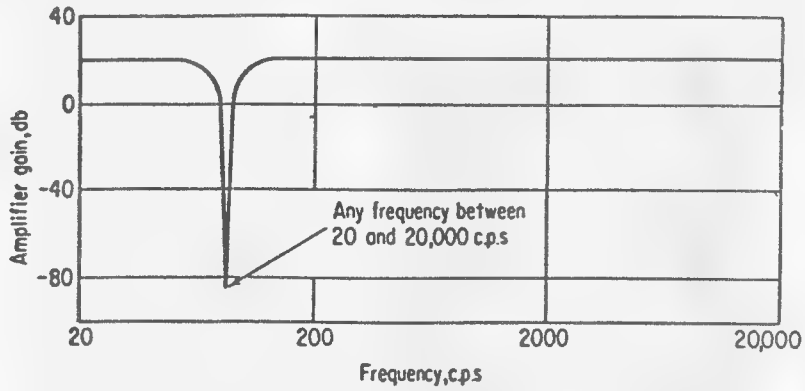


Figure 12: Rejection Characteristic of Variable-Tuned Filter in Harmonic Distortion Analyser

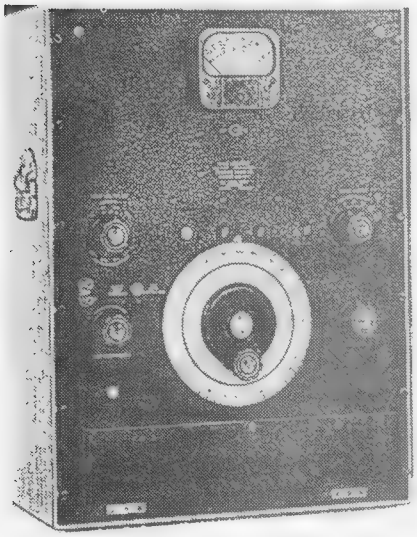


Figure 13: General Radio Heterodyne Wave Analyser

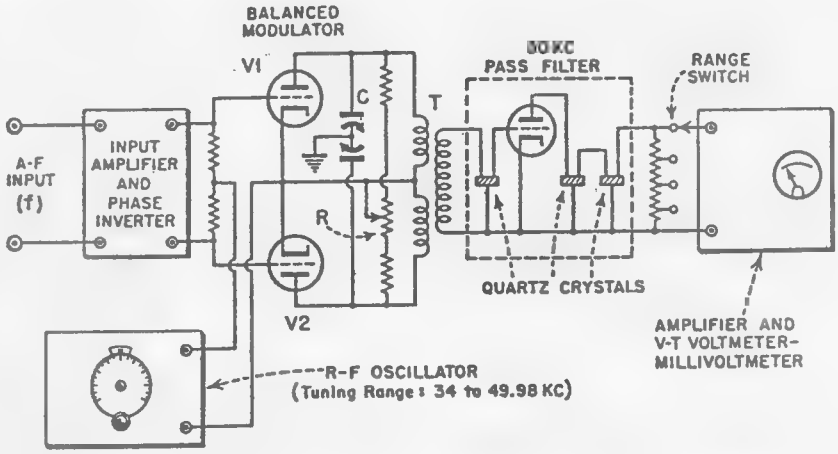


Figure 14: Basic Circuit of the Heterodyne Wave Analyser

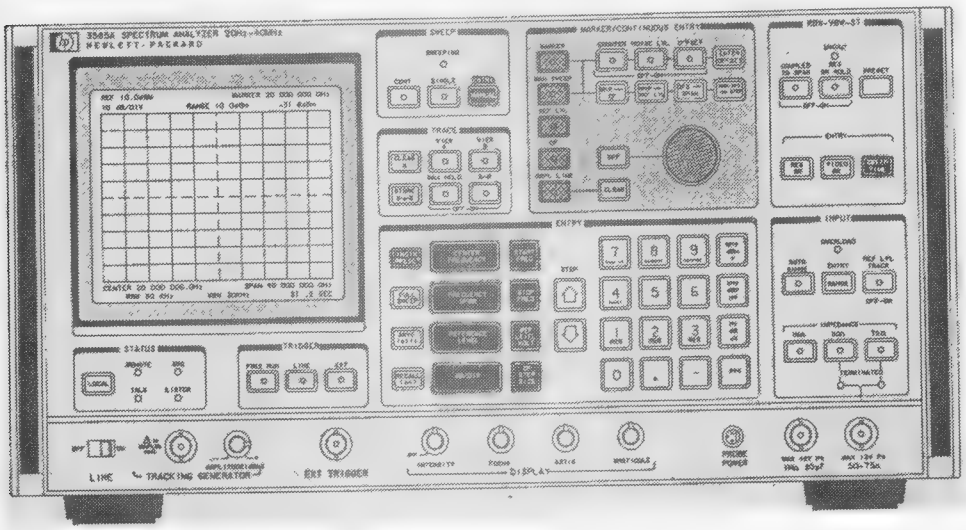


Figure 15: A Modern Spectrum Analyser

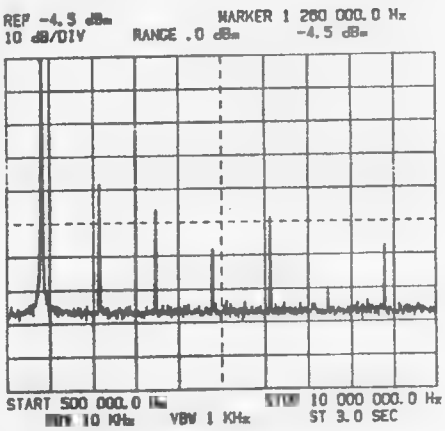


Figure 16: Fundamental and Harmonics displayed on the Spectrum Analyser

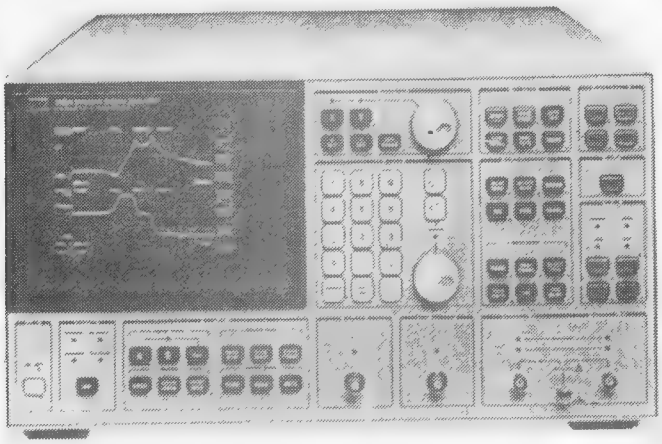


Figure 17: Dynamic Signal Analyser

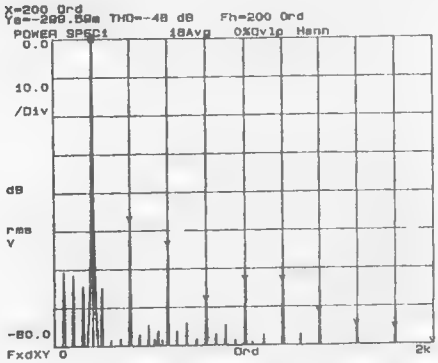


Figure 18: Dynamic Signal Analyser - Measurement of Harmonic Distortion

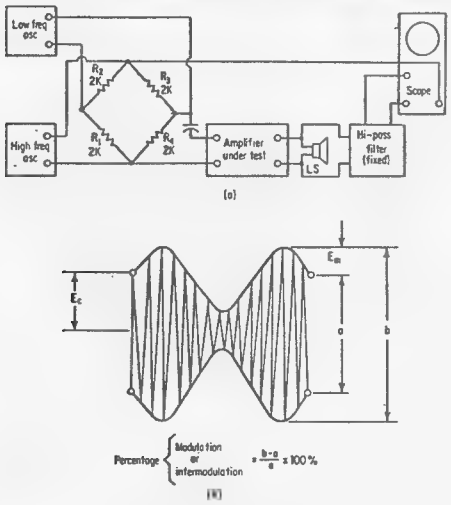


Figure 19: Measurement of Intermodulation Distortion

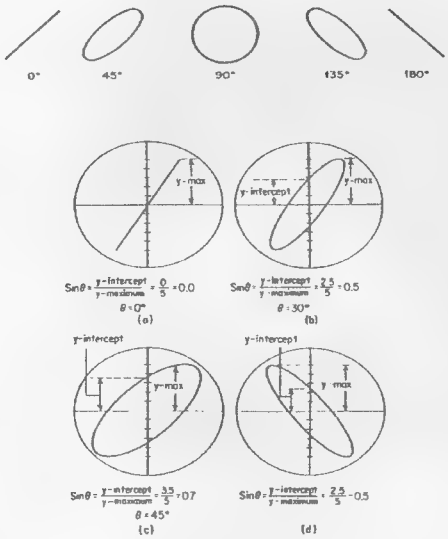


Figure 20: Lissajous Figures for Measuring Phase Difference between Two Voltages at the Same Frequency

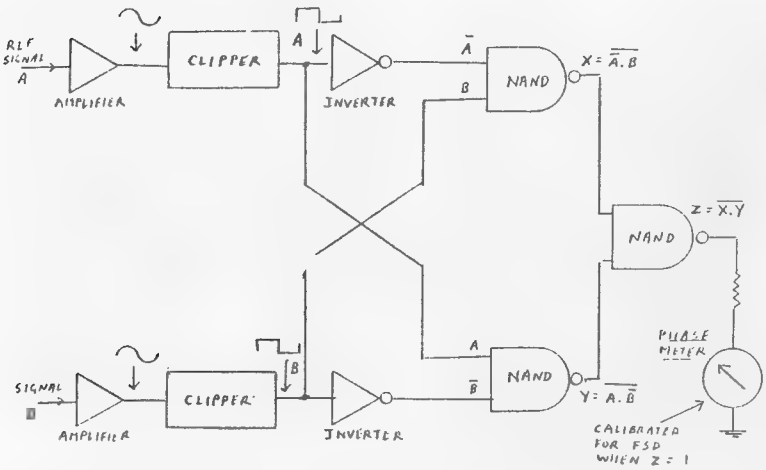


Figure 21: Digital Phase Meter

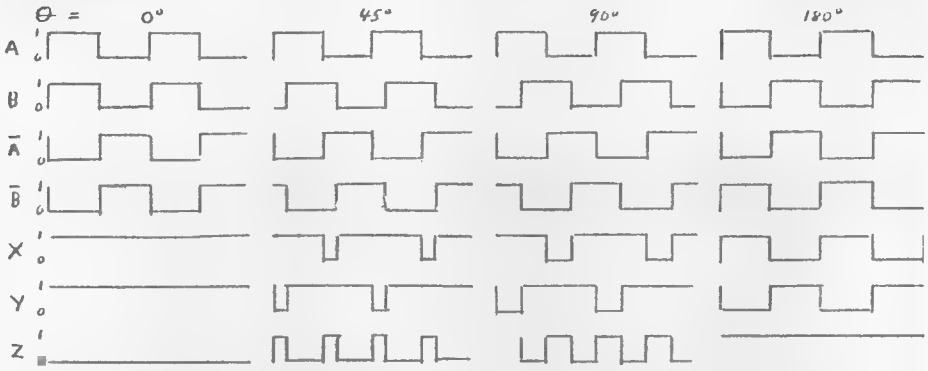


Figure 22: Digital Waveforms for Different Values of Phase between A and B
O = Phase Shift Between A and B
X = A.B.
Y = A.B.
Z = X.Y.

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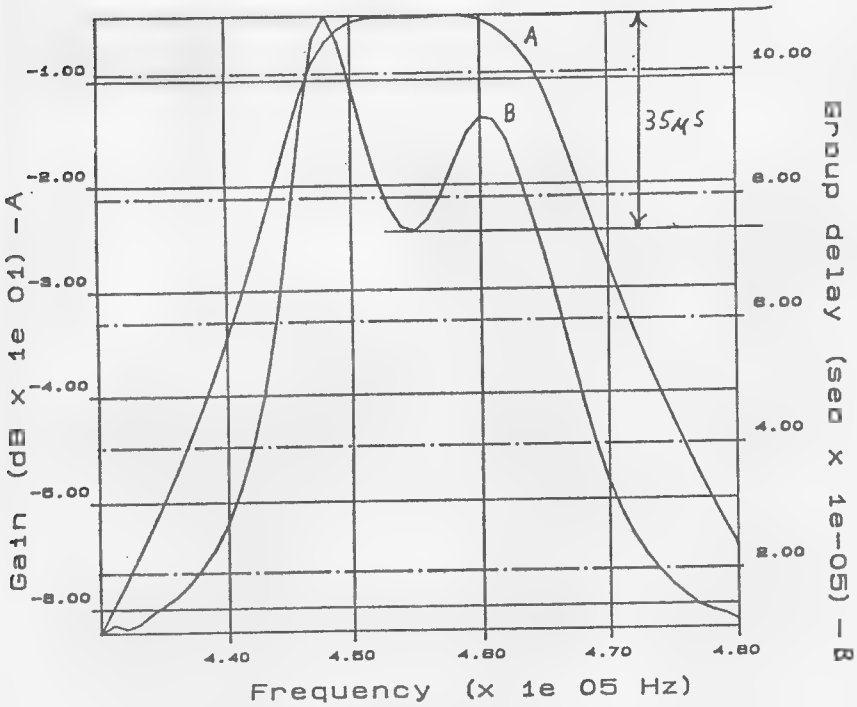


Figure 23: Bandpass Filter - Gain Response and Group Delay

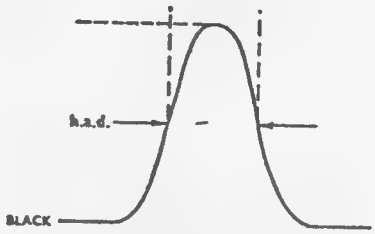


Figure 24: Sine Square Pulse

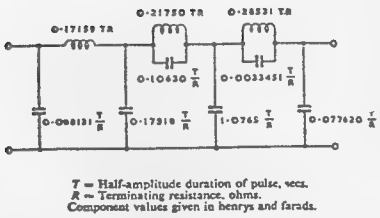


Figure 25: *Thomson Filter for Shaping*

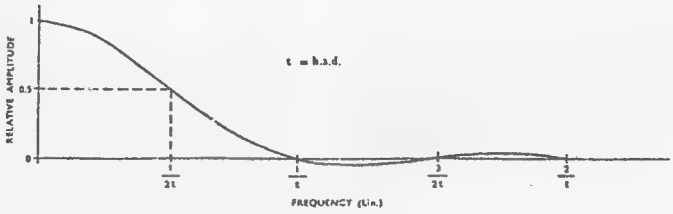
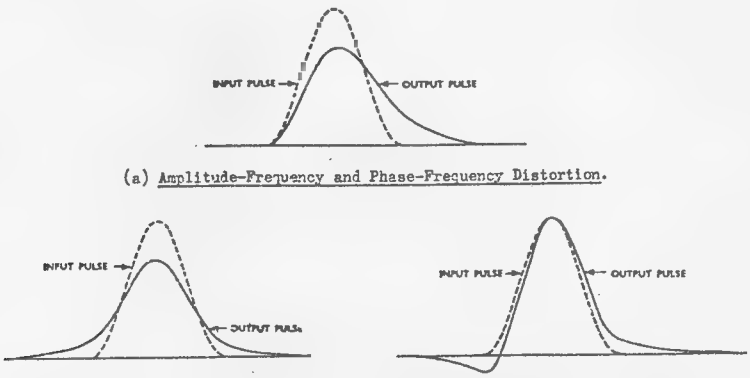


Figure 26: Frequency Spectrum of a Sine Squared Pulse



(a) Amplitude-Frequency and Phase-Frequency Distortion.

(b) Amplitude-Frequency Distortion.

(c) Phase-Frequency Distortion.

Figure 27: Distortion of Sine Square Pulse

1kW PEP Power Meter

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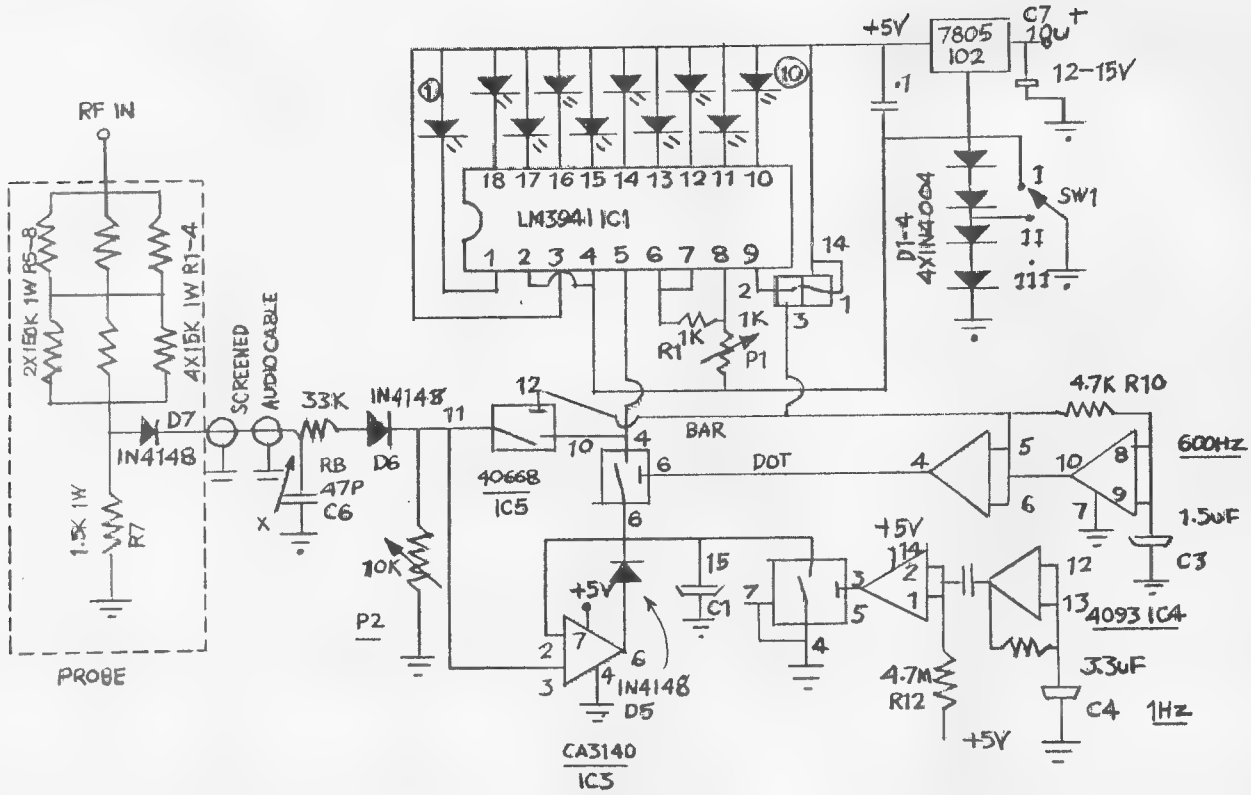

Figure 1: 1 kW PEP Meter

A meter to measure PE power is very useful. This circuit using a LED Bar Graph can be built in two forms and can be set-up for either 1 kW or 150 Watts full scale.

The simpler form provides a dot display with a slow decay showing peak power.

The more complex circuit provides, in addition to the dot display, a bar which indicates the instantaneous output. The meter has an attack time of less than 1 mS and holds the reading in DOT mode. The ranges are 5-150, 150-500 and 500-1050 watts on 50 or 70 ohms.

The unit is simple to construct and can be fitted into a small plastic box, 82x52x30 millimeters. The probe is contained in a metal box from 30x30x60 millimeters to 40x40x60 millimeters or similar, fitted with a male UHF plug (RG8) and connected to the transmitter through a UHF Tee adaptor.

Description

IC1 is a linear LED driver operated in DOT and BAR mode. D1-4 provide two steps of approximately 1.4 volts for two ranges. P1 sets FSD of IC1 to approximately 1.4 volts (two diodes.) R9 sets the LEDs current (12mA). IC5 (4066B) has four individual switches which change IC1 from DOT and BAR mode at 600 Hz rate and discharge C1. IC3 (op amp), D5 and C1 provide hold-in-DOT mode. D6 and D7 provide offset voltage drop for the first LED

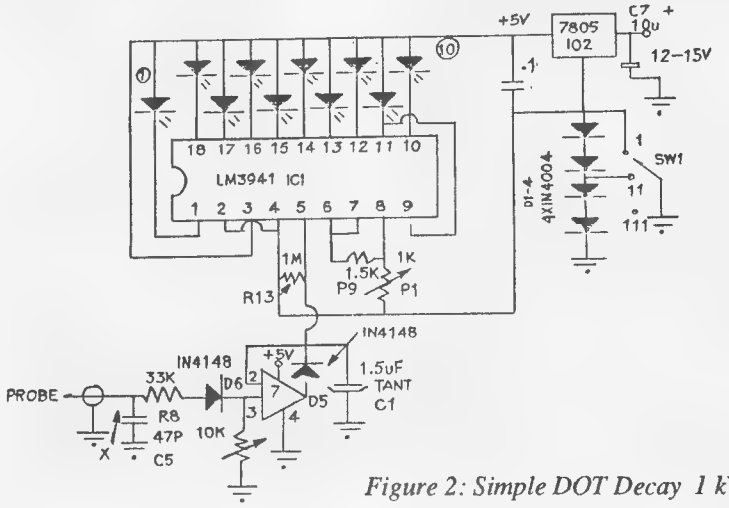

Figure 2: Simple DOT Decay 1 kW Meter

Table 1

LED	RANGE I 50 ohm W	RANGE I 50 ohm V	RANGE I 75 ohm W	RANGE I 75 ohm V	LED	RANGE II 50 ohm W	RANGE II 50 ohm V	RANGE II 75 ohm W	RANGE II 75 ohm V	LED	RANGE III 50 ohm W	RANGE III 50 ohm V	RANGE III 75 ohm W	RANGE III 75 ohm V
1	5	15.8	5.0	19.4	1	150	86.9	151.0	106.4	1	500	158.0	499.3	193.5
2	10	23.7	11.2	29.0	2	180	94.8	179.7	116.1	2	550	165.9	550.5	203.2
3	20	31.6	20.0	38.7	3	210	102.7	210.9	125.8	3	600	173.8	604.1	212.9
4	30	39.5	31.2	48.4	4	245	110.6	244.6	135.4	4	660	181.7	660.3	222.5
5	45	47.4	45.0	58.1	5	280	118.5	280.8	145.1	5	720	189.6	719.0	232.2
6	60	55.3	61.2	67.7	6	320	126.4	319.5	154.8	6	780	197.5	780.1	241.9
7	80	63.2	80.0	77.5	7	360	134.3	360.7	164.5	7	840	205.4	843.8	251.6
8	100	71.1	101.0	87.0	8	400	142.2	404.4	174.2	8	910	213.3	909.9	261.2
9	125	79.0	125.0	96.8	9	450	150.1	450.6	183.8	9	980	221.2	978.6	270.9
10	150	86.9	151.0	106.4	10	500	158.0	499.3	193.5	10	1050	229.1	1049.7	280.6

of IC1. IC4 (4093) is quadruple Schmidt trigger, two sections are used as a 600 Hz square wave oscillator to operate IC5, two other sections are used to produce 6 mS +ve pulse at 1 Hz rate to discharge C1. R1-6 and R7 is RF voltage divider. R5-6 are frequency compensation. R1-7 are one watt carbon film resistors.

Frequency response is flat from 3.5 to 28 MHz. Since the meter reads RF voltage, indication will depend on the SWR. Diodes D1-4 are power diodes, 1N4004 or similar, selected for identical forward voltage drops at 10 mA. C1, C3, and C4 are tantalum capacitors. P1 and P2 are miniature 10 turn vertical pots, for ease of adjustment.

DC Calibration

Set P1 for 0 ohms, P2 for maximum resistance. Connect a variable DC power supply through a 1N4148 to point X (the RF probe is not connected at this stage.) Set SW1 to range II, and increase voltage input until first LED just lights up. Measure the voltage with a digital voltmeter and make a note of it. Change SW1 to range I, and adjust P1 until the 10th LED just lights up. Check that the voltage is the same for the 10th LED on range II as for the first LED on rage III. If D1-4 are identical it will be the same.

RF Calibration

Connect the transmitter, via the reference power meter, to a dummy load. Connect the probe to the output of the transmitter or dummy load via a Tee adaptor, SW1 range I. Increase power on any band, to 100 watts and adjust P2 to light up the eighth LED. It can be calibrated for 50 or 75 ohms as required. In case the output of the probe is too low, you can reduce R8 to 22 k ohms.

If on high input, during DC calibration, the display locks-up (that is, the 10th LED stays on), changeover the input/output of the IC5 section used to discharge C1. In my case, pin 11 to ground was locking-up, causing the 10th LED to stay on. Swapping around solved the problem. Other sections of the IC5 used to switch BAR and DOT might also cause problems in a similar manner.

A 10 LED bargraph display was used in this model and is readily available from Jaycar and Altronics.

150 Watt PEP Meter

The meter is identical to the 1 kW version (except that D1-4 and SW1 are omitted). The probe is smaller and P1 is in different positions as shown on the circuits. P1 is used to offset voltage drop of D7.

C1 is 10uF tantalum for the DOT and BAR display. The probe is made of the same type resistors as the other version, and are installed in a metal box 25x25x50 millimeters OD (Sucobox by Suhner, or similar). The frequency response is a flat 3.5 to 30 MHz.

DC Calibration

Set the arm of P1 to ground. Connect a variable DC power supply through a 1N4148 to point X. Adjust P2 for the 10th LED to just light up at one fifth voltage shown in the table for that LED. Repeat the process.

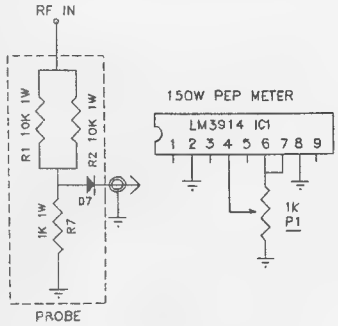

Figure 3: 150 Watt Meter

RF Calibration

Connect all as for the 1 kW meter. Increase CW power to 100 watts, adjust P2 for the eighth LED to just light. Check that the first LED lights for five watts in. If not, adjust P1. Repeat the process.

A Screw Loose?

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Timely tip for Icom IC-2A owners

For those of us who own an IC-2A hand held, and its companion fast charger, the BC-30, one does not have to be told of the convenience of slipping the whole unit, complete with battery pack, into the charger and commencing a recharge cycle.

But beware! Having not removed the battery pack from my transceiver for some months, I was quite intrigued that when I went to replace it with another pack I had obtained, I could barely slide it more than 3mm without it binding in some place. My attempts at gentle persuasion failed to get it to budge.

The cause of the problem turned out to be that one of the screws in the bottom of the transceiver proper had worked its way out, and was catching on the battery pack as it was moved across.

As one cannot get the pack off, how do you screw back the screw, you ask?

The answer is that the two screws on the back must first be removed and then ever-so-gently, the case is prised apart just enough to allow the battery pack to be lifted clear of the runners.

After removal, check the tightness of all the other screws in the bottom plate. Don't let it happen to you!!!

ar

Sporadic - E propagation at VHF

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Since the mid 1940's much research has been carried out and many technical articles have been published on the subject of sporadic-E propagation at the low frequency end of the VHF spectrum. In recent years techniques have been developed by the International Radio Consultative Committee (CCIR) which allow the statistical prediction of received field strengths by sporadic-E propagation over paths as long as 4000 km. Such techniques are of use to broadcasting engineers in the planning of co-channel television services on Band I frequencies (Australian channels Ø, 1 and 2) and the same techniques are of interest to 6 metre and 2 metre amateur radio operators as they may be used to predict the likelihood of a sporadic-E opening over a particular path during a given season of the year (especially summer).

In general, the altitude range 90 to 130 km constitutes the E region and encompasses the normal E layer and sporadic-E layers. The normal E layer occurs regularly displaying a maximum density near noon and a seasonal maximum in summer. The altitude of maximum density is usually about 110 km.

The transmission path of a signal reflected by the normal E layer is shown in Figure 1. Initially the transmitted ray is curved during its passage through the lower atmosphere and at incidence with the E layer, if the layer has reflective properties at the frequency in use, the ray is refracted back down to the earth's surface. Generally the maximum usable frequency (MUF) over the transmission path shown is greater at lower E layer heights and increases as the ionisation of the layer increases.

During sporadic-E conditions a comparatively thin layer with high electron density is formed within the normal E layer and propagation is possible at frequencies much higher than usual. The sporadic E layer is distributed in patches ranging in spatial extent from several kilometres to 1000 km and with a thickness typically 500 to 2000 metres. The height of the layer is usually in the range 95 to 135 km with a most probable value of 110 km. Sporadic-E layers are believed to be formed by the interaction of shear horizontal winds at ionospheric heights with the normal E layer and the earth's magnetic field. Unlike the normal E layer the comparatively thin and highly ionised sporadic-E layer is more prone to reflect radio waves than to refract them.

About the author:

Since 1979 Peter Stackpole has been employed by the Department of Transport and Communications as a propagation engineer. During this period he has been involved in the planning many MF radio, FM radio and TV services throughout Australia. In recent years he has been heavily involved in the planning of the new commercial UHF TV services to be introduced into regional Australia.

General Occurrence

At present there is no recognised short-term prediction technique for temperate zone sporadic-E, however it has been observed that intense sporadic-E tends to occur more frequency on magnetically quiet days. In brief, the major occurrence patterns of temperate zone sporadic-E are as follows :

(a) A dominant maximum during the summer months with the seasonal minimum usually near midwinter or the spring equinox.

(b) A diurnal pattern where the majority of sporadic-E propagation occurs during daylight hours. One peak is usually found near mid morning and a second peak near sunset.

(c) A possible dependence on the sunspot cycle which results in maxima at both the sunspot maxima and the sunspot minima. This sunspot cycle dependence is not yet confirmed.

Maximum Usable Frequency

A simplified propagation path for transmissions occurring during sporadic-E conditions is shown at Figure 2. The MUF over the path is directly related to the critical frequency at the midpoint of the path, and in technical circles this sporadic-E mid path critical frequency is designated as foEs.

Generally, with reference to Figure 2, the actual numerical value of the MUF over the transmission path may be evaluated from the following relationship:

$$MUF = \frac{k\ foEs}{\cos i}$$

For a 1500 km path (transmission angle of about 4°) the incident angle i to the E layer at the midpoint of the path is approximately 80°. The value of k specified in the equation above has been experimentally determined by CCIR study groups as being in the range 1.2 to 1.3 under sporadic-E propagation conditions. Thus, if the midpath critical frequency foEs for the above case equals 7 MHz, then the MUF over the path may be evaluated as:

$$MUF = \frac{1.3 \times 7\ MHz}{\cos 80} = 52.4\ MHz$$

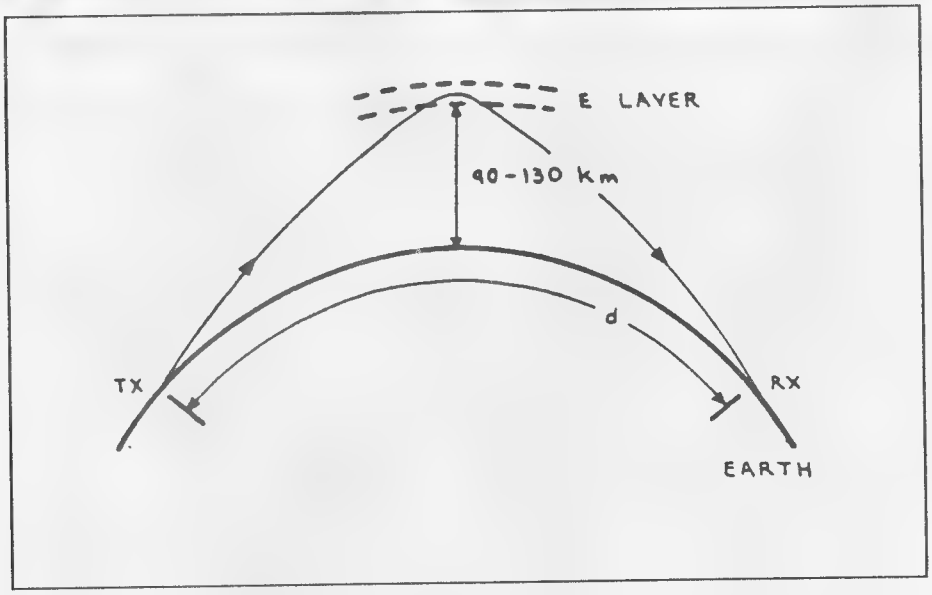

Figure 1 Normal E Propagation Path

Consequently, propagation at the lower end of the VHF spectrum may be expected whenever foEs equals or exceeds about 7 MHz.

A world map showing the estimated percentage of time for which foEs equals or exceeds 7 MHz during the summer months in temperate zones is illustrated at Figure 3. This map is one of a series developed for the CCIR by various study groups in the northern hemisphere and the contours shown for the southern hemisphere are an extrapolation only. In our region the percentage of time for which foEs may equal or exceed 7 MHz is estimated to range from about 3% of the time in Western Australia to 4.5% of the time in Eastern Australia and New Zealand during the summer months.

Illustrated at Figure 4 are graphs showing the estimated value of foEs equalled or exceeded for a given percentage of time for the Eastern Australia/New Zealand region during the November to February (0800 to 2300 only) and March to October periods. These graphs were derived by the author from similar curves published by the CCIR for other regions and from the published world maps disucssed above. As can be seen from Figure 4 sporadic-E occurrences are much more likely during summer months than during other times of the year.

Polarisation Discrimination

VHF signals reflected by sporadic-E layers suffer a considerable degree of depolarisation. Nonethless, measurements conducted by the BBC some years ago over a number of sporadic-E paths indicate that the use of a receive antenna orthogonally polarised with respect to the transmit antenna may result in an average relative cross-polarisation loss of about 5 dB for single hop propagation. Consequently, amateur stations engaged in single hop sporadic-E contacts should use the same polarisation to the obtain optimum performance under marginal conditions. This optimum condition is usually realised as most DX operators on 6 metres and 2 metres use horizontally polarised antennas.

Path Loss

In practice, during a sporadic-E opening, the transmission loss over a particular path may be reduced to a free space loss which is proportional to distance and an ionospheric absorption loss (r) which occurs at the point of reflection from the sporadic-E layer.

The free space received field strength at a particular distance (d,km) from a transmitter, for an effective radiated power of 1 kW, may be determined from the following relationship:

EFS = 107 - 20 log (d) dB above 1uV/m

For an effective radiated power of 100 watts the above formula may be modified to:

EFS = 97 - 20 log (d) dB above 1uV/m

Hence, as an example, for a 1000 km path the free space received field strength from a 100 watt effective radiated power station will be :

EFS = 97 - 20 log 1000
= 37 db above 1 uV/m
= 70.0 uV/m

The ionospheric absorption loss (r) during the sporadic-E propagation conditions may be estimated from the curves shown at Figure 5.

These curves originate from research performed by Miya, Shimizu and Kojima as part of a working party for the CCIR to develop an improved method for the calculation of sporadic-E signal strengths. For a given path distance the ionospheric absorption loss (r) is dependent upon the

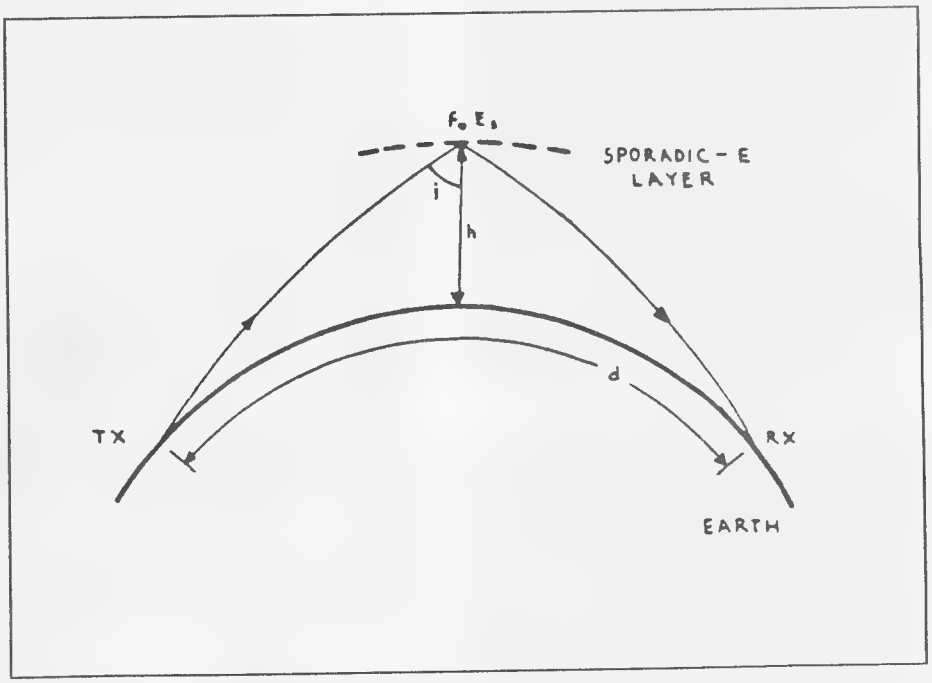

Figure 2 Sporadic-E Propagation Path

transmission frequency in use (f) and the critical frequency at the midpoint of the path (foEs).

Using the above free space propogation law and the CCIR research data which has been presented, it is possible to estimate the percentage of time that the 6 metre and the 2 metre amateur bands will be open during the sporadic-E conditions. To allow a numerical analysis the effective radiated power of the amateur station must be known and the field strength necessary for adequate reception at the amateur station must be determined.

6 Metre Band Analysis

Many amateur stations on 6 metres use a 10 to 20 watt output transmitter feeding a 4 or 5 element yagi antenna. In this analysis it is assumed that the amateur station has an antenna with a power gain eight times that of a dipole (9 dBd). For convenience, ignoring transmission line losses, it is assumed that the station has a total effective radiated power of 100 watts.

The field strength required for adequate reception at the amateur station is a little more complicated to determine.

From theory

$$\Sigma = E\frac{f}{\sqrt{R}} \cdot \frac{2\pi}{300}\sqrt{\frac{120}{G}}$$

where = received field strength (uV/m)
E = receiver terminal volts (uv)
R = transmission line impedance (ohms)
f = frequency in use (MHz)
G = antenna power gain with respect to an isotropic radiator

A typical 6 metre receiver has an input sensitivity of 0.25 uV for a 10 dB output signal to noise ratio and is optimised for a 50 ohm transmission line. An antenna with a power gain of 9 dBd has a relative power gain of 11.15 dBi (13 times over an isotropic radiator). Thus using these parameters at 52 MHz we can evaluate:

$$\Sigma = 0.25\,\frac{52}{\sqrt{50}} \cdot \frac{2\pi}{300}\sqrt{\frac{120}{13}}$$
$$= 0.117 \text{ uV/m}$$
$$= -18.6 \text{ dB uV/m}$$

As a result, in this case, the amateur station will have adequate reception whenever the received field strength is -18.6 dB uV/m or greater (ignoring transmission line losses and external noise).

Using the above amateur station parameters the percentage of time for which the 6 metre band will be open on various transmission paths during sporadic-E propagation conditions may be estimated as follows:

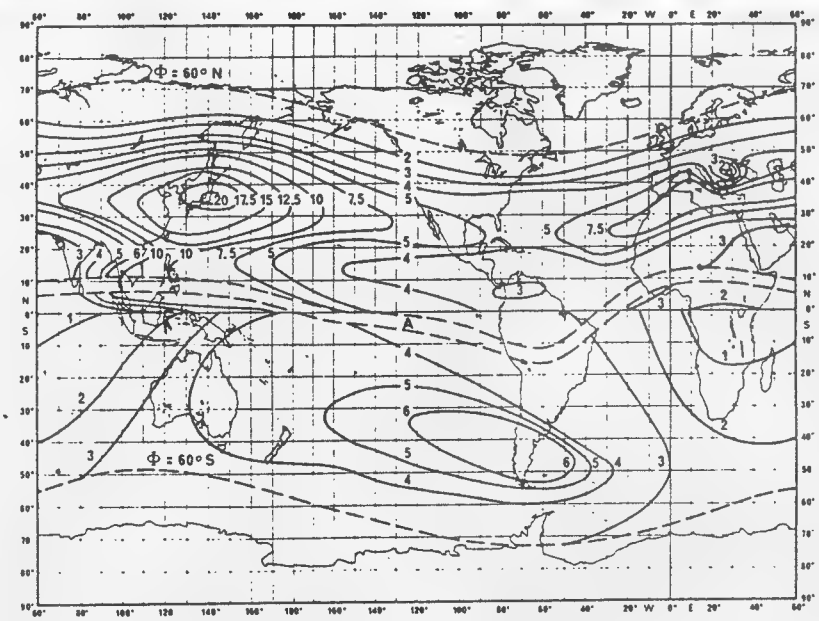

Figure 3 Percentage of time for which temperate sporadic E (foEs) equals or exceeds 7 MHz at vertical incidence in the sones during the summer months.
Summer months in the Northern Hemisphere: May, June, July and August.
Summer months in the Southern Hemisphere: November, December, January aand February.
A: Equatorial zone.

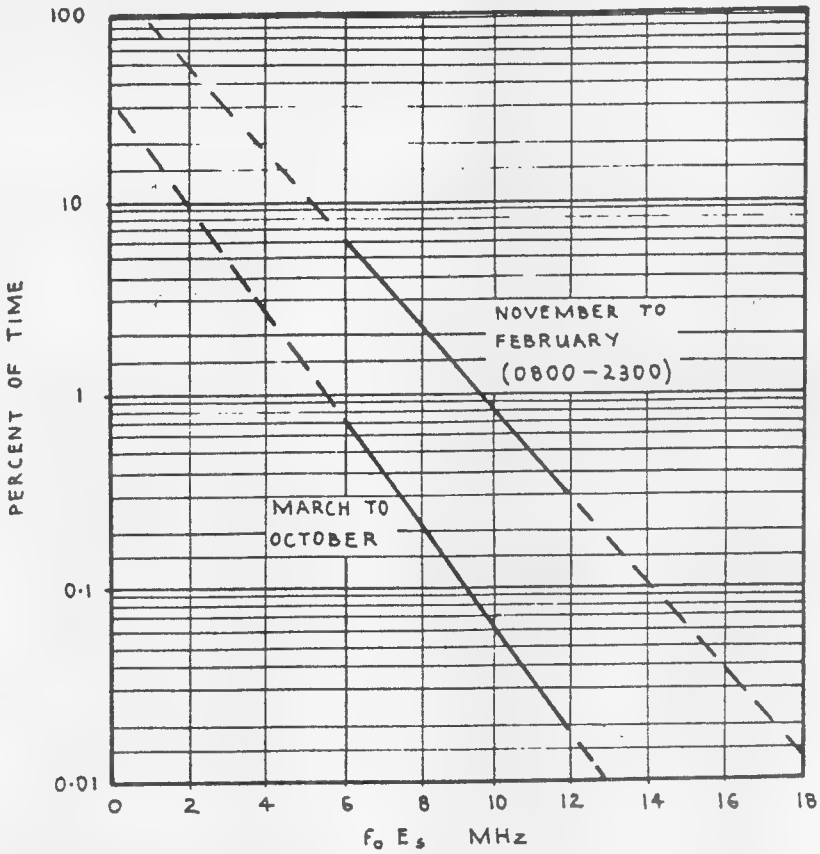

Figure 4 Estimated foEs equalled or exceeded for given percentage of time in Eastern Australia/New Zealand region.

Example 1: Summertime, transmission path 1500 km

(a) the received free space field strength from the 100 watt erp station is calculated to be :

EFS = 97 - 20 log 1500 dB uV/m
= 33.5 dB uV/m

(b) Since the necessary receive field strength at our average station must be at least -18.6 dBuv/m, then the maximum ionospheric absorption loss which can be tolerated is :

Γ = 33.5 - (18.6) dB
= 52.1 dB

(c) From Figure 5, with d = 1500 km and = 52.1 dB then:

$\frac{f}{foEs} = 7.4$

(d) hence for f = 52MHz then

$foEs = \frac{52}{7.4} = 7.0$ MHz

(e) From Figure 4, with foEs = 7.0 MHz the percentage of time that the band will be open equals 3.8%.

Example 2: Summertime, transmission path 500 km

(a) EFS = 97 - 20 log 500 = 43 dB uV/m

(b) I = 43 -(-18.6) = 16.6 dB

(c) from Figures 5, $\frac{f}{foEs} = 3.6$

(d) $foEs = \frac{52}{3.6} = 14.4$ MHz

(e) from Figure 4, the percentage of time the band is open equals 0.08%.

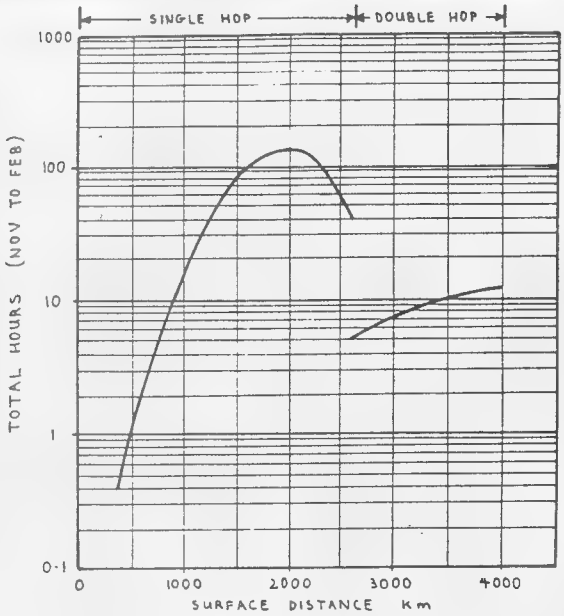

Figure 7

Evaluating all summertime cases between 400 km and 4000 km it is possible to produce the single hop and double hop propagation curves illustrated at Figure 6. These curves show the percentage of time during the months November to February (0800 to 2300) that the 6 metre band is estimated to be open over a given distance between amateur stations of the type described.

As can be seen from Figure 6 single hop propagation occurs infrequently at distances less than about 600 km. This is due to the relatively high ionisation of the sporadic-E layer necessary to reflect signals arriving from comparatively large transmission angles. Optimum single hop propagation occurs over path distances between 1600 to 2300 km (transmission angles of approximately 4° to 0.5°). Beyond about 2600 km single hop propagation is inhibited as at very low transmission angles the path between the transmitter and the sporadic-E layer is obstructed by the curvature of the earth.

Disregarding tropospheric extensions, sporadic-E propagation at path distances longer than about 2600 km is usually achieved via the double hop mode. Statistically the occurrence of double hop propagation is less likely than that of single hop propagation. In general double hop propagation exhibits a broad peak over path distances from about 3500 to 4000 km.

To simplify the interpretation of Figure 6, the percentage of time curves have been reproduced at Figure 7 with the predicted total duration of band openings in hours per summer period (0800-2300) plotted versus transmission path distance. Generally the total hours shown for each path length will statistically be made up of a large number of short band openings and a relatively fewer number of longer openings. Thus whilst in a given summer season there will be many opportunities to make sporadic-E contacts over a 2000 km path (eg Melbourne to Townsville) the number of oppor-

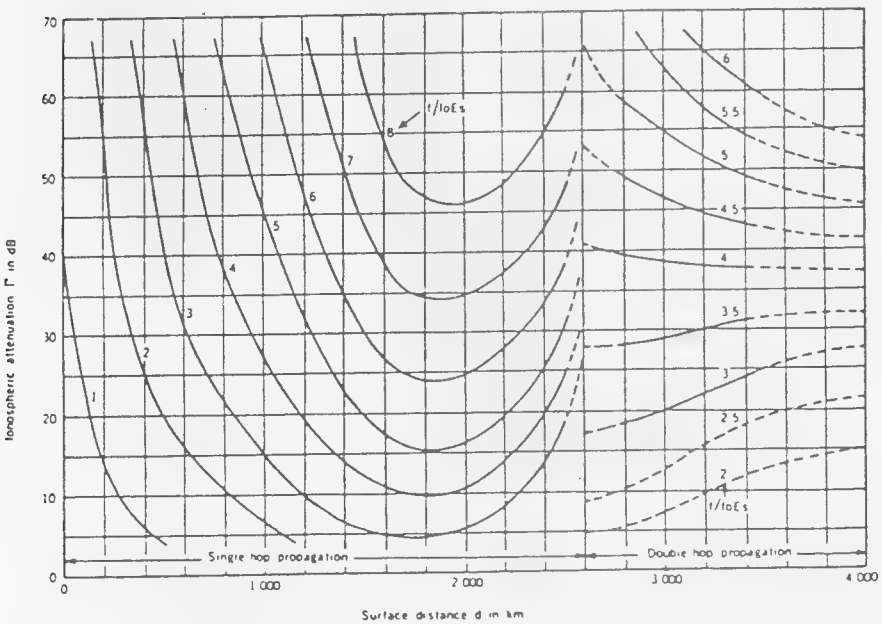

Figure 5 Chart of ionospheric attenuation r in E, propagation in the use of broad directivity antennas.

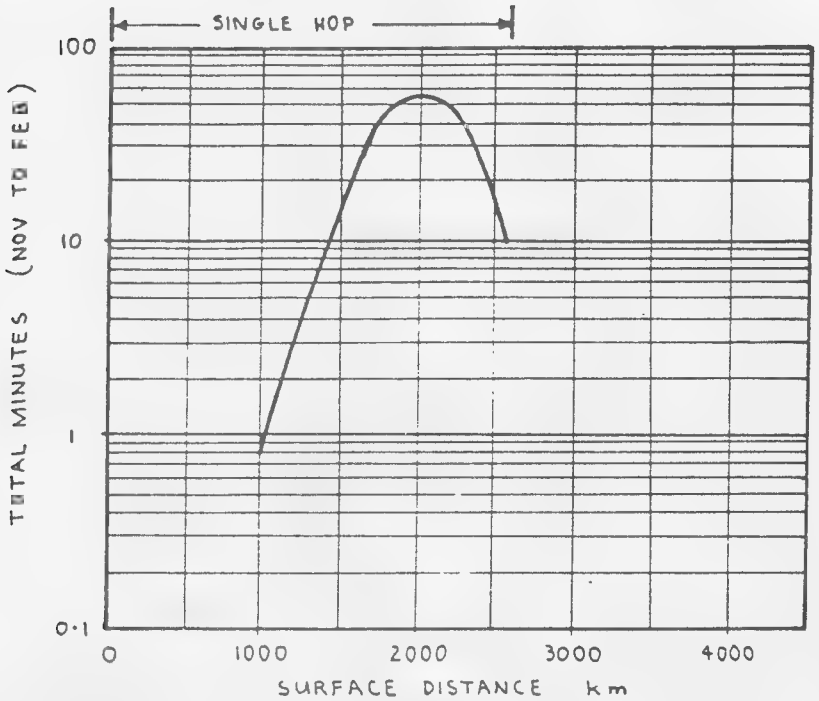

Figure 8

tunities over shorter paths (eg Melbourne to Canberra) will be extremely limited. Similarly, usable double hop band openings will also occur relatively infrequently.

The curves generated at Figures 6 and 7 are considered to be appropriate for many 6 metre amateur contacts, however of course, changes in transmit power, receive capability and local noise considerations will modify the calculated percentages of time accordingly. A similar shaped (but much lower percentage of time) set of curves for single hop and double hop propagation may be generated for the months March to October by using the above method and the appropriate graph at Figure 4.

2 Metre Band Analysis

According to Miya, Shimizu and Kojima the ionospheric abosrption curves at Figure 5 are believed to be applicable from 10 MHz to 150 MHz. Consequently it is possible to rework previous calculations for a frequency of 144 MHz using appropriate 2 metre station parameters.

The results of an analysis for a 1 kW effective radiated power 2 metre station with a 12 dBd gain antenna and a receive sensitivity of 0.1 uV for a 10 dB output signal to noise ratio are given in Figure 8. The single hop curve produced shows the predicted total duration of 2 metre band openings in minutes per summer period (0800-2300) plotted versus transmission path distance. As can be seen from Figure 8 sporadic-E openings occur for a significanly lower percentage of the time on 2 metres than on 6 metres. The likelihood of double hop propagation on 2 metres is negligible.

The optimum sporadic-E propagation path distance on 2 metres is approximately 2000 km, which is the same as for 6 metres. Usable 2 metre openings are only likely to occur during periods of intense E layer ionisation, with a good indication of this condition being the presence of short skip forward sporadic-E signals on 6 metres. For example, the presence of forward sporadic-E signals between VK3 and VK1 on 6 metres indicates the possibility of sporadic-E propagation between VK3 and VK4 on 2 metres.

Conclusion

The preceding article has been written to provide an insight into some of the techniques used by broadcasting engineers at the lower VHF frequencies and also to promote a better understanding of sporadic-E propagation occurrences on both the 6 metre and 2 metre amateur bands. It should be appreciated that the technical calculations made are based on the average of many CCIR measurements accumulated over a number of years, thus it is to be expected that individual sporadic-E seasons will provide more or less band openings than predicted.

Sporadic-E propagation occurrences are known to be a common seasonal event on 6 metres, however greater operator awareness is required to exploit those brief openings which occur on 2 metres. Last summer season produced a number of good 2 metre sporadic-E openings over distances of about 2000 km and it is possible that next season may provide as many opportunities. In any event I hope to catch you in the pile-ups, whether it be on 6 or 2.

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TELL THE ADVERTISER YOU SAW IT IN AMATEUR RADIO

Preston House Revisited

by A. Shawsmith, VK4SS
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At 2 p.m. on the 2nd April 1989 a mixed group of twenty people - young, middle-aged, OOTers and VIPs - braved inclement weather to gather in the vestibule of the Australian Alliance Insurance Building (formerly Preston House), 371 Queen Street, Brisbane.

They were there to attend a short ceremony and unveil a large wall plaque, which was mounted to record and honor the achievements of the first two men to break 'the broadcast sound barrier' in the Sunshine State: Dr Valentine McDowall - radiologist, and wireless experimenter Thomas M.B. Elliott.

In 1920 these pioneers began regular transmissions of voice and music on 800 and then 350 meters. This was five years before Queensland's 'official' station 4QG came on air.

Prior to 1920, unsuccessful attempts had been made to transmit SOUND using high frequency alternators. In 1918 the first thermionic valve suitable for handling watts of RF power was produced in the USA. McDowall and Elliott quickly put this progression to use and designed and assembled a 20 watt Heising modulated transmitter.

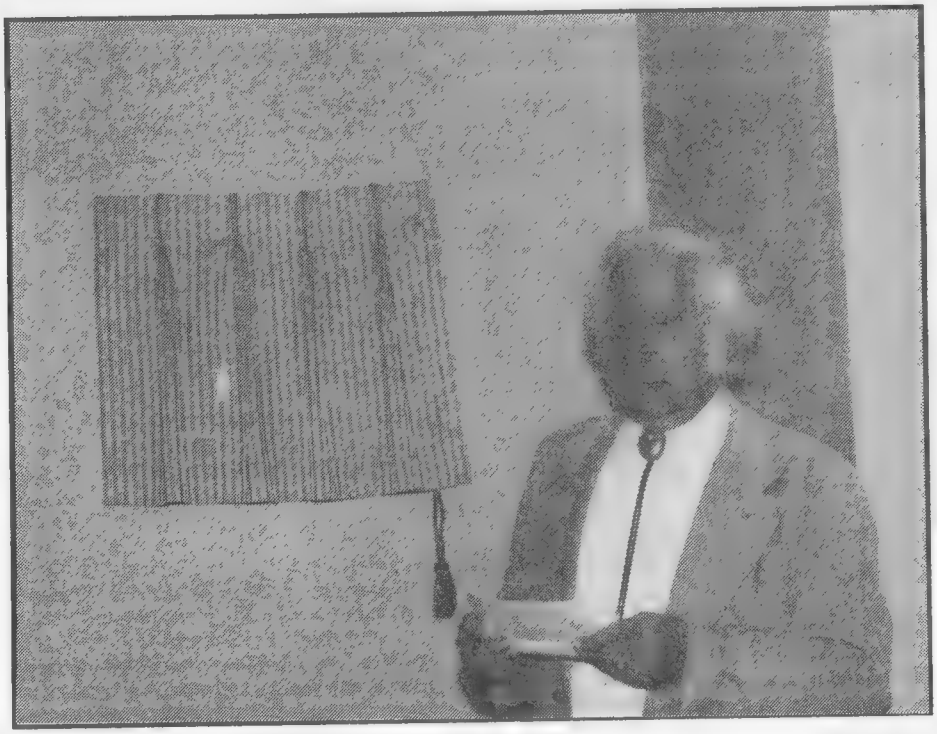
Their choice of a good transmitting site was particularly fortunate - Preston House, newly built, was one of the tallest structures in Brisbane at that time. Two masts were erected on the roof and a resonant L-shaped Marconi-type cage antenna was strung between them at a height above ground of 200 ft, well clear of any nearby object. In an effort to maximize antenna current, many hours were spent trimming and adjusting the multi-wire counterpoise; but this was discarded altogether when it was found that a simple connection to a water tap provided equal antenna current. The building's foundations were close to underground water. This may have had some effect.

Station 4CM (the amateur call sign allotted to Dr. McDowall) quickly expanded beyond studio music into many successful Outside Broadcasts conducted from various venues in and near the city. The broadcasts were heard by thousands of listeners in many parts of Australia and were reported clearly audible on Ocean Island, 2000 miles out in the Pacific. Home-brewing of receivers, both crystal and valve, increased dramatically, consequently, when station 4QG first came on air in 1925, a listening audience was already established thanks to the 'pathfinding' efforts of McDowall and Elliott.

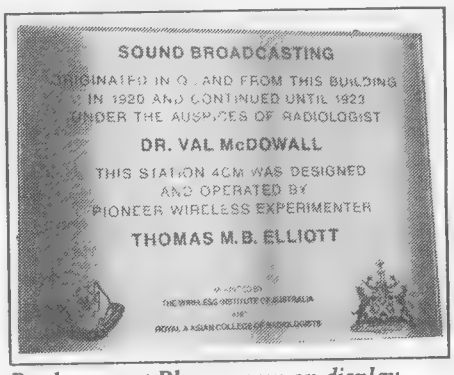
Post 1925, both men turned their attention to TV research, working from the now famous Brisbane landmark, the Old Windmill Tower. After many test transmissions their efforts finally resulted in the regular transmission of TV programmes in 1935. By now, both men were internationally known and acclaimed.

A suggestion was put forward that their names be included in the Birthday Honors list. This did not eventuate, however other honors were bestowed upon them. TMB Elliott was made an Honorary Fellow of the Queensland University (1965) and a Fellow of the Royal Historical Society of Queensland (1966). Two plaques were erected to commemorate their achievements, one in Preston House and the other at the Windmill Tower and a full size photograph of the two men, standing together, has been hung in the Memorabilia Room of the Telecom Tower Building in Canberra.

The mounting of this plaque on 2.4.1989 replaced the original one which had been on public view for over forty years, before disappearing during renovations to the building in 1987. The WIA (Qld Division) and the Royal Australasian College of Radiologists wish to make grateful acknowledgement to Brisbane Broadcast Station 4BC and Mr Alan Campbell OBE for their generous financial help with the above.



M/C Bill Bentson VK4QF at the unveiling cremony. Photo: David Brownsey VK4AFA



Replacement Plaque now on display. Photo David Brownsey VK4APA

TELL THE ADVERTISER YOU SAW IT IN AMATEUR RADIO

"Awesome Orson" – The Big Blow!

Dr Harry Atkinson VK6WZ
Unit 5, 97 Railway Parade
Mt Lawley 6050

Amateur operators in VK6, VK2 and VK3 kept the lines of communication open for health and welfare third party traffic on the day when Severe Tropical Cyclone 'Orson' paid a call to the Pilbara.

The Pilbara in the north west of WA, where they suck oil and gas from the seabed offshore and blast mountains of iron ore from the ground inland, is no stranger to cyclones.

Each "wet" while we in the south have our long, dry summers, people in Australia's top left hand corner from the Kimberleys southwards watch and wait to see if their life giving rain, beginning as water vapour over the Timor Sea will be delivered relatively gently by rainbearing depressions - or hurl viciously at them by cyclones.

Sunday, April 23 was the day 'Orson' - the most severe cyclone ever recorded since Australian weather records began - crossed the WA cost between Point Samson and Cape Preston. 'Orson' had been seen on the evening television weather for several nights, moving towards the coast, then seemingly backing off, then resuming its coastward progress again, all the time deepening in intensity and growing larger on satellite pictures.

Finally, the moment many feared came... In the early hours of Sunday, the centre crossed the coast bringing screaming winds of 280 km/h to places like Roebourne, Onslow, Karratha, Pannawonica, Paraburdoo and Tom Price. Boats were torn from moorings and either carried metres inland or dashed onto rocks. At least one ABC radio station went off the air, power lines were blown down, radio and TV antennas smashed, roofing iron flung about and trees uprooted. Outback stations reported buildings unroofed and many windmills damaged. The Dampier weather radar - which had been vital in tracking 'Orson's' progress over the ocean - was put out of action, and at first feared to be a total loss. Later reports, however, said the antenna damage was bad, but the electrical and electronic gear was OK.

The mining town of Pannawonica was among the worst hit; about eighty percent of its buildings suffered severe damage.

The Cyclone Watch Net

The first contacts via amateur radio began about 3am Sunday between Peter VK6ZW Karratha and Sam VK2BVS Sydney who kept 14.275 open for emergency traffic. Peter was fortunate in that his antenna withstood the blast - as did the power lines in his part of Karratha. Traffic was light at first, since no-one is encouraged to move about out of doors and deliver messages during a red alert!

With daylight came reports from affected areas of strong winds and widespread damage. Emergency services and police welcomed the setting up of the amateur radio net and asked the ABC in Perth to request all enquiries about relatives to be telephoned to 277-1514 - VK6RQ's number - a compliment indeed!

The weekly VK6 WIA news at 9.30am carried announcements asking amateur operators to leave the Cyclone Watch Net frequency of 14.275 clear and this request appeared to be heeded for the most part, and traffic which began slowly, gradually built up and was handled efficiently by those taking part.....VK's 2BVS, 6AJR, 6ZW and 6RQ.

How It Began

The ground work was laid on the Saturday night when Bob Walker, VK2YRX, Australian Third Party Traffic Net co-ordinator telephoned key members to arrange a net for 5am EST Sunday. This mean a 3am start for the man closest to the "action" - VK6ZW Karratha, who stayed with it till 8pm WA time Sunday, when 'Orson', still severe, had moved to sparsely populated areas and the Cyclone Watch Net closed. Ray 6RQ joined the net at 5am WA time and also remained till closing time. Although the actual traffic passed was light, something like 70 enquiries were handled at 6RQ's place where the telephone seemed to ring almost non-stop for most of the day. Ray pays tribute to his married daughter Joanne, without whose work at the 'phone he couldn't have coped.

A Short History of Communications

Continued from April issue

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4701

This era passed down in history Nelson's famous signal, "England expects".

With the invention of steam propulsion for ships, it was not too long before electricity appeared on the scene. It didn't take very long for the enterprising matelots to harness this to the searchlight. As its name suggests, this was used primarily as a night-time aid to surveillance or reconnaissance, but it was not long before some "bright spark" fitted a set of shutters in front of the lens allowing the light beam to be interrupted by keying the shutter.

As this would be about contemporary in development with the Morse code, it was only natural to combine the two techniques. I do not know if the Navy ever tried "forward scatter" using searchlights lighting up cloudbases but there is a possibility! On the technical side, the reason for using a shutter to key the output of the searchlight is perfectly obvious. In those days the illuminating source for the searchlight was a carbon arc and these did not take kindly to being keyed on and off as in Morse. Even with the introduction of the incandescent lamp the time lag for the lamp to reach full brilliance slows transmission times drastically unless special types of lamps of low power are used.

Our land bound forces in the Army were not behind in using these light signalling devices but they had also gone through the traumas of developing new types of visual signalling more suitable to their environment. An early system of signalling by Morse was one using a single flag. This flag (usually white) was waved in short arcs (dots) or in long arcs (dashes) and was quite an efficient short range way of signalling as it required very little in the way of support equipment. I have personally operated this system during my pre-WWII Army Cadet and Militia days in a battery of horse drawn field artillery and this system remained until the outbreak of WWII, I believe. Also in use until even later, with good effect, was the Lucas Lamp. This could be carried on horseback or by foot or mechanised units.

All of these visual signalling systems had one failure as a secure signalling system.

The Heliograph was another visual signalling device used by the Army but its use was dictated by the climate of operation. In hot dry climates, they were superb, particularly if the terrain was elevated. The British Army used them with great effect between the forts in the Himalaya Mountains along

what used to be called the North-West Frontier in what is now Pakistan. They worked consistently over ranges of 100 kilometres and, in some circumstances, recorded DX ranges exceeding 150 kilometres. These Heliographs consisted of a mirror mounted on a tripod and aligned so that the sun's rays were directed to the receiving station when the mirror was keyed by a disk on the alignment nut of the mirror. The system needed constant attention to the mirror alignment to compensate for the movement of the sun across the sky. When the sun was behind the sending station it was necessary to reflect the sun's rays into the keyed mirror by another mirror called a duplex mirror.

All of these visual signalling systems had one failure as a secure signalling system. This was the inherent fact that they were liable to interception by persons placed strategically along the signalling path. The use of encoded and enciphered messages tended to improve the security of the system but these messages could be decoded eventually, as is still the case for our more sophisticated signalling systems. The immediate remedy lies in the use of encoding systems which take longer to crack and decode than the action called for in the message. The ultimate aim is to make interception impossible by the introduction of new techniques or by such means as frequency agile transmissions of random but synchronised method of frequency switching during the actual transmission of the message.

Up to the present day techniques of digital transmission by radio, fibre optics, microwaves, satellite and space communications, the process has gone on at an ever increasing pace.

The introduction of the electric telegraph on the communication scene had two immediate benefits apart from the formation of a telegraph operators' union. The first was extension beyond visual limits of the length of the possible transmission path, and this distance could be further increased by the use of relaying stations. The second benefit was in the improved security of the traffic. After all, very few people carried a telegraph set with them and the few operators were employed by the telegraph companies. However, in due course, both private equipment and operators became available, and the lure of big money available for early stockmarket and government, and other decisions were exploited by unscrupulous people, as is still being done to the present time. However, the lines were very vulnerable to damage, deliberate or not, and magnetic storms affected long distance lines.

From the beginnings of the technological age with the invention of the telegraph through the development of machine telegraphs such as the teleprinter and teletype, and up to the present day techniques of digital transmission by radio, fibre optics, microwaves, satellite and space communications, the process has gone on at an ever increasing pace. There is a warning to the Amateur Radio Service inherent in this growth of technology, insofar as the value of the frequency spectrum increases greatly with each new technical advance (even if pioneered by amateurs). The present demand for frequency allocation by all kinds of unlikely bodies is nothing to the ferocious demands we will see in the future by new services unheard of at this time.

An improvement in time can be achieved by the use of a telephone at each end!

Throughout the history of communications, the need has been stressed for three major factors. These are speed in the first instance. It must be quite obvious that the faster a message is passed from A to B, the sooner the necessary action can (not necessarily WILL) be taken. The speed of a message path must, unfortunately, include the time taken to deliver the message to the transmission centre and from the receiving centre by the originator and to the addressee respectively. This can well be the slowest part of the system, as we may well be back to square one with a runner or despatch rider type of service needed, particularly for delivery. An improvement in time can be achieved by the use of the telephone at each end but this, in turn, requires some training in message handling to be effective.

Apart from drawing attention to obvious mistakes, the message handler is required to pass the message on expeditiously and accurately.

There seems little to be gained using a system capable of speeds of 600 words per minute, as the beam wireless and cable systems were, if the handling time at each end is measured in minutes or hours. However there is one big advantage in a high speed medium. The amount of traffic passed from C to D (the transmitting and receiving stations) can be very high and an efficient delivery system from and to a large number of As and Bs allows a large number of originators and addressees to be served adequately. A further advantage in the higher utilisation of the path B to C means less requirement for other paths for the same traffic volume. This in turn can mean the use of one data channel instead of several or the need for a lesser number of radio frequency allocations for the service.

The efficiency of the delivery system can be greatly improved by the use of more sophisticated methods and equipment as these become available with new technological developments. These improvements will, no doubt, continue in the future as the price and availability of these techniques become more acceptable. These days the training of students in the operation of keyboard type devices is almost universal, so the extension of these techniques to a communications application is comparatively easy. This would suggest the use of some form of digital communication for message distribution and, indeed there is no major hassle in using the same basic form of communication between major point-to-point communication nets. To quote two amateur technologies which are already capable of use in this way, it is only necessary to mention AMTOR and Packet Radio.

The second need is for accuracy in the handling of the message and this applies to both the transmitting and reception process. It is assumed that the originator has used accuracy in compiling the message, but errors have been known to be made at this level. Apart from drawing attention to obvious mistakes, the message handler is required to pass the message on expeditiously and ACCURATELY. It is pointless to spend large amounts of money setting up an excellent communication facility, if the training of the message handling staff does not ensure fast and accurate transmission of the traffic from C to D. Inaccuracies in transmission only slow the system, as it becomes bogged-down in requests for repeats of garbled text and results in working speeds much slower than the system's capability. This statement holds good for all systems from the simple phone link to the most complex system available. Strangely enough, the simple telephone link proves to be the most prone to error. Perhaps this is because this task is frequently given to the least trained members of the team. This is further compounded by the fact that the addressee on the receiving end of the phone may not have any message handling skills or training at all.

To be continued

Seanet 88 Convention

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One of the major social events in the amateur radio calendar in Region 111 took place in Bangkok, Thailand over the weekend of 11-13 November 1988.

It was the Sixteenth SEAnet Convention which has developed into one of the most friendly and informal gatherings of radio amateurs in South East Asia - hence the acronymn SEA.

These days, amateur radio boasts many get togethers on air - nets - and the South East Asia net - SEAnet is one of the oldest. It all started back in the '60s and it has run pretty well continuously since then. Nowadays the net meets at 1200 hrs Z on 14320 kHz +- QRM and with cycle 22 getting well into its stride, worldwide check-ins should once again be possible.

In 1971, John van Lear VE7IR; 9M2IR; 9VIOQ etc etc (the list of John's calls is too long to reproduce here) suggested that the voices on the air meet face-to-face. And so they did in Penang over the holiday period 30 December 1971 - 1 January 1972.

The Convention has been held most years since then but two years 1986 and 1987 were missed. At the initiative of RAST, the IARU member society in Thailand, a convention was planned for 1988.

One hundred and fifty eight people registered including amateurs, wives and families. Of these 64 were from Thailand, 21 from Japan, 19 from Singapore, 16 from USA, 11 from Brunei, 6 from Malaysia and 5 from Australia. Other countries represented included Karen State (1Z9), Canada, England, Germany, Hong Kong, India, Indonesia, Sri Lanka and Sweden. The rep from Sri Lanka was the well known Paddy Gunasekara 4S7PB who has just got back on the air after over 10 years absence. All old time SEAnet stalwarts were pleased to meet Paddy once again.

RAST had set up a programme for all attendees who were kept fully occupied for the entire duration of the Convention. It was noteworthy that the opening ceremony on the Friday evening was presided over by Thai Deputy Prime Minister Thienchai Sirisamphan in the presence of the new Director General of the Post and Telegraphs Dept, Kun Sombat Uthaisang. Guests were entertained with a series of Thai classical and folk dance items. On Saturday a visit to the Thai government earth satellite station at Sri Racha was undertaken. Two busloads of eager amateurs plus families together with a police escort travelled approx 170 km into the province of Chon Buri in double quick time. The three big dishes at the station were a source of envy for most of the amateurs but most had to agree they wouldn't fit well in an average city lot.

The official banquet was held on the Saturday evening during which guests were entertained with Thai songs from Northern Thailand. In addition, a most skilled magician baffled all with his box of tricks and sleight-of-hand magic. He could be a useful person to have on-side at the next ITU WARC. A working plenary session was set for the Sunday morning. In between all this and if one could find the time, there was a most interesting exhibition of amateur radio equipment featuring both imported and locally made Thai products. For the non-amateur attendees, there always was the magnetic attraction of the many and varied stores and markets of Bangkok.

The SEAnet organisation, if it could be called that - is a very loose one indeed. It is not a formal part of either IARU or IARU Region 111 but it does present an excellent forum for IARU officers to learn of grass-roots problems within the area and also allows, in a rather low key way, IARU to project its existence and image to amateurs who may otherwise never get to hear about the Union. And so it was that the recently concluded IARU Region 111 Conference (Seoul, October 1988) was a major subject of discussion during the Sunday morning plenary working session. Such matters as Packet Radio, Band Plans, Future Frequency Allocations and QSL cards were aired.

The date and venue for the next SEAnet Convention - the Seventeenth - was decided and the offer by SARTS Singapore through its President, Selva 9V1UV, was unanimously accepted. Selva announced that the dates would be 17-19 November 1989 in Singapore. Details of hotels and events would be announced later.

SEAnet continues to meet every day on 14,320 kHz +- QRM at 1200 hrs UTC. All interested amateurs worldwide, no matter their QTH, are invited to check-in in accordance with the net controller's instructions. And then the faces behind the voices can be met in Singapore in November 1989.

Join us sometimes both on the air and for an eyeball - you'll enjoy it. ar

Fig 1. The 1Z9 gang . L. to R : Laydo 1Z9A: Stephen Dun 1Z9D: Cheryl Dun 1Z9YL and Sahplo 1Z9C - Photo Frank Aw 9V1OK

Seanet 89

The 17th Southeast Asia Network Convention will be held in Singapore from Friday, 17 November '89 to Sunday 19 November '89. It is a special opportunity for Eye Ball QSO's Programme, includes demo of new technology-interactivity communication system "TELE-VIEW", etc. etc.

Seanet 89 Contest
CW Saturday, 15 July 1989 0000 UTC
to Sunday 16 July 1989 2400 UTC
Phone Saturday 19 August 1989 000 UTC
to Sunday 20 August 1989 2400 UTC
Further details from:
Organising Committee
SEANET 89
Maxwell Road, P O Box 2728
Singapore 9047

QSO Party to help quality for Lion City Award
Date: Oct 21, 1989
Time: 0000UTC - 2400UTC

Background: the Lion City Award is available to Amateurs and SWLs who have confirmed cntacts with 5 9V amateur radio stations (10 for amateurs in CQ Zone 28). applications must submit a certified log extract (GCR) to the Awards Manager, SARTS, Maxwell Road, P O Box 2728, Singapore 9047 with 5 IRCs.

QSO Party Rules: 9V stations will operate all bands 80 - 10 meters (no WARC for award), CW and SSB. DX stations send RS(T) and CQ Zone; Singapore stations send RS(T) and serial number.

Award applications: For stations working 5 9V stations during the QSO party, contacts need not be confirmed. Submit log extract with complete exchanges to Awards Manager, with reduced fee of 3 IRCs. QSO Party contacts may be combined with confirmed QSOs to quality for the award; minimum of 3 QSO party contacts qualifies for the reduced fee. There is no penalty for invalid submissions, but all applications will be checked against 9V station logs. ar

Fig 2. L to R. Dr John Ho VK3PP ex 9M2KR and David Rankin 9V1RH/VK3QV "Did you really miss that ZA on 40m?" – Photo Frank Aw 9V1OK

Roger Harrison returns to ETI

From the May issue, well-known radio amateur and identity in electronics publishing, Roger Harrison VK2ZTB, will be back on the editorial credits of Electronics Today as "Electronics Editor".

Roger will be contributing substantial pages of material each month, comprising news, features, projects, articles, profiles and columns, supported by an experienced editorial and draughting team from the Apogee Group which is producing the material under contract to Federal Publishing.

This move will considerably strengthen the electronics and communications editorial content of ETI, which will be clearly refocussed on three major reader groups: enthusiasts, professionals and consumers.

"Having been licensed for some 25 years now, amateur radio is still a major interest of mine and, as amateurs are a significant and active group among enthusiasts, ETI will have significantly increased content of interest to amateurs and other communications enthusiasts, by way of projects, articles and news items in the magazine month by month", Roger said.

Roger was previously editor or ETI from 1979 through December 1984. During that period, ETI reached a peak circulation of 33.500 and ran issue sizes as large as 228 pages. He started Australian Electronics Monthly in July 1985, which ceased publication in January this year.

Roger has been a contributor to AR over the years and is a four-times winner of the WIA's Higginbotham Award; in recent times he won it twice in successive years in 1986 (jointly with Jim Linton VK3PC and 1987 (jointly with Dr Leo McNamara).

"We're looking for news items on amateur events and achievements from individuals, clubs r WIA divisions. We're also looking for articles and projects, for which a fee is paid on publication", Roger said. "Prospective authors needn't worry about 'getting it right' we'll do the 'polishing' required."

Portion of EYI will still be devoted to articles of general interest and "high tech" features in line with the new format developed late last year.

The Apogee Group will also be producing a number of one-off publications for ETI this year.

The Apogee Group can be contacted on telephone (02) 555-1646, fax (02) 818 2949, postal: Locked Bag 888, Rozelle NSW 2039. ar

Equipment Review

The Yaesu FT-411, two metre FM hand-held transceiver.

Ron Fisher VK3OM
'Gaalanungah'
24 Sugarloaf Rd
Beaconsfield Upper
3808

I often wonder where all of the two metre hand-held transceivers go to. The only ones heard on the air are via repeaters and many of those don't seem to be getting in properly. Maybe most use them the way that I use mine, as a monitor for the local repeaters. I must say that the rig I have been using for this application over the last year or so has been the little Yaesu FT-23 and it has performed the job extremely well. I was therefore most intrigued to hear about the FT-411. It's about the same size as the FT-23 but has a full keyboard for direct frequency entry plus an incredible 49 memories. I might be wrong, but it seems that the development of hand-helds is somewhat in advance of the larger mobile and base station transceivers. The amazing thing is how the designers fit it all in.

As might be expected, most of the accessories are interchangeable between the two transceivers. These include battery packs, chargers, external speaker/microphones, mobile mounting brackets etc. Many of the excellent features of the FT-23 have been extended and improved. The power saver system now has selectable options, the read out gives the operator more information although it is not as readable as the FT-23 display. And perhaps one of the greatest improvements is the illumination of the display and the keyboard. This was non-existent on the FT-23 although a modification is possible to incorporate it. Now not only is the display illuminated but the entire keyboard is brilliantly lit from the rear.

Let's now look at the FT-411 in more detail. As supplied with the FNB-14 battery pack, the dimensions of the complete transceiver are only 55mm wide, 32mm deep and 155mm high. Take the battery off and the actual transceiver is only 85mm high and this includes the knobs. With the FNB-14 pack the transmitter output is rated at 2.5 watts, however substitution of the FNB-11 battery pack gives a whopping 5 watts output. There are five nicad packs available which have either 7.2 or 12 volts output to give either 2.5 or 5.0 watts output and capacities from 200mAh to 1000mAh.

A variety of soft cases is available as options to suit the transceiver and the different battery packs. A soft case is not supplied as standard as it was with the FT-23.

As is usual with keyboards, most of the buttons have dual functions which are brought into use by pressing the 'F' or function button. These include the selection of two VFO's, high or low power selection, battery saver function, keyboard lock etc.

The 49 memory channels can be programmed for frequency, repeater shift, continuous tone controlled squelch system, one instant call channel memory, plus memories that set the frequency limits for band scanning.

And there will be no more flat batteries because you just plain forgot to switch the transceiver off! A period of 10, 20 or 30 minutes can be programmed after which the transceiver switches off if no controls are used within that time. It will even play you a song to remind you that it is going to switch off!

A VOX circuit is built in but it is necessary to use the optional YH-2 headset. I recall trying the VOX on an earlier Yaesu two-metre hand-held some years ago and found it rather awkward to use and certainly not recommended for repeater use.

VFO tuning steps can be selected for 5, 10, 12.5, 20 and 25kHz. For our local band plan either the 5 or 25kHz stepping is fine. The 25kHz steps enable rapid tuning up and down the band. This is also excellent for band scanning.

The FT-411 On The Air

The first impression of the 411 was that the audio quality was rather worse than the FT-23. With the inclusion of the keyboard, panel space is rather limited and so a smaller speaker has been fitted. While the quality is fairly satisfactory for a small hand held, it is noticeably inferior to the FT-23 in both terms of quality and acoustic output. The LCD display is also inferior to the FT-23. While it is about the same size overall, it contains quite a bit more information, so everything is smaller. It also appears to be set further back from the clear plastic front cover so that in daylight there are reflections which cause distorted digits. The symbols that indicate power saver, auto power off, low battery etc. are too small to be discernible to my eyes. If you are younger than I am, you might do better.

Transmitted audio quality was rated as excellent with plenty of punch. As is usual the stubby antenna has rather limited radiation capabilities. If you are looking for consistent results, a larger antenna is recommended.

Battery life is excellent, particularly if the transceiver is used mainly for monitoring. Current drain in transmit is quite high at 1.3 amps for the nominal 5 watt output and about 750mA at 2.5 watts output, so as with all hand-held transceivers, only talk if you have something to say.

The transceiver is supplied with a wall point charger which is fitted with a multiple type output connector, so you might find this useful with other equipment.

The FT-411 On Test

Only a limited number of tests could be carried out on the FT-411 as I have not as yet set up all of my test gear after moving into a new QTH.

Power output using the supplied 7.2 volt battery, 2.7 watts with fully charged battery, dropping to 1.8 watts just before the battery gave out. Low power setting produced exactly 0.5 watts.

The section of the LCD display that represents the 'S' meter was checked with the following results. There are actually twelve segments in the display and they give a range of about 15dB which is a little more than 1dB per segment. Because of its extremely small size and limited range it is of little use.

The transceiver was tested at length using my base station antenna and the receiver front-end performance was found to be very good with no "funnies" being heard. The receiver uses somewhat more front-end selectivity than is usually found in hand-held transceivers. The RF amplifier is an unusual device with two bipolar transistors in a direct coupled circuit but enclosed in a single package. The receiver first IF is at 17.3MHz and the second mixer, 455 second IF and FM detector are all in a single IC.

The FT-411 Instruction Book

As is usual for Yaesu, the instruction book is very well presented. There is unfortunately no technical description included but a full circuit covering four pages is there plus a block diagram. 15 pages are devoted to operation and an

Front panel view of the FT-411

excellent operations chart is included which you can take along with the rig as a reminder for those less-used functions.

The FT-411 Conclusions

If you need a hand-held two-metre transceiver with just about every conceivable feature with 49 memory channels that you can slip into your top pocket then the FT-411 is probably just what you are looking for. Compared with the FT-23, the operation is somewhat more complicated but once you have your required frequencies in the memory it becomes more straighforward. However, again compared with the FT-23 many of the often used functions require the pressing of two buttons as against one for the 23. The choice is yours of course, and if you do choose the 411, you will certainly have one of the most up to date full-featured FM transceivers around. Thanks to Dick Smith Electronics for the loan of the FT-411 used in this review. Full details on price and availability can be obtained from your nearest Dick Smith store.

A handful of transceivers, the FT-23 and FT-411 for comparison

WICEN

Trevor Connell VK8CO
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Casuarina 0811

Writing a WICEN exercise

This article, set out in the format of an Exercise Instruction, provides guidance on how to write an instruction. It is supported with an Example Skeleton Instruction and an Aide Memoire for preparing a briefing. Although considerable detail is provided, it does not cover every situation and so there are some items which can be deleted and possibly many which can be added.

Some of you may recognise the format. It has proved its worth many times over to the originators and to me not only in organising WICEN activities but in other events like Novice Courses. I feel sure that with imagination, it can be adapted to anything.

I strongly believe that something like this, even in a different format, is essential. It can be an impressive piece of paper not only to your own members but also to outside agencies, thereby enhancing the image of WICEN and Amateur Radio.

File: If applicable.
See Distribution List.

EXERCISE INSTRUCTION
WRITING AN INSTRUCTION

References:

A. NT Standard Operating Instruction
B. Regional Co–ordinators Manual
C. There may not be any references.

General

1. Every activity requires some preparation and organisation. The culmination of all this should be an Event/Exercise Instruction. In this section you introduce whatever it is very broadly.

Aims

2. The aims of this Instruction are:
   a. To convince you that one is necessary.
   b. To give you an example of how to lay it out.
   c. To suggest some headings.
3. Before planning an exercise the aim must be clearly defined. It must be concise and clear.

Factors

4. The following factors must be taken into account when planning an exercise.
   a. Interest. Unless interest is maintained throughout the exercise much of the value to the operator will be lost.
   b. Time and Space. Is it a suitable time for the majority. Will the time involved in getting to and from the area be too great?
   c. Numbers. Are there enough operators taking part to achieve the aims?
   d. Equipment. Is there enough suitable equipment?
   e. Meals. Will meals be required?
   f. Medical. What do you do if...
   g. Control. No matter how much planning and preparation is done to achieve success it will be to no avail if there is a lack of control.

Reconnaissance

5. A personal reconnaissance of the area is desirable but not always possible.

The Exercise Instruction

6. The Exercise instruction contains all the event/activity details required before the exercise commences. It should also include Annexes. An Annex is an item of information too large or bulky for the main part of the instruction. They may be:

a. Stores list
b. Radio Net Diagrams
c. Detailed timetables
d. Event organiser's brochure/information
e. Copies of maps/location diagrams
f. Actions to occur if...

Debrief

7. Details of the debriefing.

Conclusion

8. Not only does writing an Instruction force you to attend to all details, it shows, when issued to the participants, that you have done your bit to ensure the success of the activity. Nothing kills motivation more than an unorganised shambles.
9. The Example Skeleton Instruction lists some possible headings you may like to consider. The list is not exhaustive and will depend on the type of activity you are planning.
10. While this was written for WICEN, it could be adapted for any radio club activity.

Trevor Connell VK8CO
Deputy Director
VK5/VK8

Annexes.

A. Radio Net Diagram VHF
B. Radio Net Diagram HF
C. Stores List

Distribution

All participants Qty
Regional Co-ordinator 1
Spare 5
File 1
Whoever is interested
Outside agencies?
Example Skeleton Instruction
Telephone No
File No:

Distribution:

"Activity" Instruction
"Activity" Name

References: A.

If applicable

General

1.

Aims

2. a.
b.

Conduct

3. a. Phase 1
b. Phase 2
c. Phase 3

Timings

4. Can be listed here or if complicated, given as an Annex.

Communications Plan

5. Radio diagrams, frequencies. (May be left till briefing or given as an Annex.)

Dress and Equipment

6.
7. a. Transport
b. Stores
c. Meals
d. Refuel
e. Medical

Briefing and Debrief

8. Time and place

Conclusion

9.
Signature.
(Name and title)
ANNEXES
A.
B.
Distribution

ar

SWR - A Can of Worms

John Sparkes VK6JX
83 Anemone Way
Mullaloo 6025

Next time you are standing around "chewing the fat" at a WIA or radio club meeting, ask your friends what SWR is and what problems it causes you, or more specifically, your transmitter.

You will doubtless receive all sorts of weird and wonderful answers mainly centering around Reflected Power, and how this hazy substance bounces back and forth, up and down the feedline - finally ending up as heat in your finals!

Now, don't get me wrong, I've read the text books, and seen the little "pulse" diagrams showing incident and reflected power - but it all seemed very abstract, and I have suspicion that this probably wouldn't be of much value as an aid to understanding mismatch problems. (When I listen to some of the explanations of SWR, I think I'm right!)

Commonsense

So, I questioned some of my lecturers from Uni days, and it seems my commonsense approach was right - reflected power should not be considered as a substance which flows back down the feedline and heats up your finals - this is carrying an abstract idea too far.

We all know that if an antenna is resonant, and its feed impedance equals the feedline impedance, then we will have "1:1 SWR", and except for small IR losses, all is well. Now if the transmitter output impedance, also equals the feedline impedance, then **maximum** transmitter power will be transferred to the feedline and all is still well. (This is why you tune up your valve final - to ensure that its o/p impedance = feedline impedance!) This is the point where most people start to perspire and won't look you straight in the eye - what happens if one or all of these impedances aren't equal?

Two conditions can arise:

1. Antenna not resonant, hence reactive component present.
2. Antenna resonant, but feed impedance not equal to feedline impedance.

These two conditions amount to the same thing as far as your transmitter is concerned - the impedance looking into the bottom end of the feedline is no longer 50 or 75 (or whatever) ohms non-reactive. In fact, the impedance at the antenna terminals is **transformed** to a different impedance by the feedline. (I'm not kidding - look up Smith Charts). This very fact of life is employed in Bazookas and other matching transformers using lengths of feedline.

Now, if your transmitter is not capable of providing a conjugate match (largely a function of how much variable L & C your output stage has got in it) to this unknown impedance than your transmitter finals will get hot - and I didn't mention reflected power once!!

Dielectric Losses

The last problem most people don't realise is that as the mismatch on the feedline gets worse, so the peak voltages and currents on the feedline get higher. This causes your feedline to become more lossy, as the higher the voltages present, the more power is dissipated in the dielectric of your feedline. (This is why open wire feeders are less lossy than coaxial cable - (dry) air is a better dielectric than PTFE or polythene.)

These dielectric losses are also very frequency dependent, which is why long runs of standard coax are bad news on VHF and above.

Tables showing the extra losses incurred by high SWR are in all the text books, and as you'll see - a 3:1 SWR does not mean that 25% of your output power comes back down the feedline and heats your finals!

If your transmitter can match itself into the 3:1 SWR at the bottom of the coax, and it is putting out 100W, then by golly, except for a little bit of IR and dielectric losses in the feedline, all of that 100W is going to be radiated - regardless of the 3:1 SWR indicated by your SWR meter!

If you own a rig with SWR protection, forget everything I've said as it probably won't worry you - your rig will just turn itself down. Then, whatever fraction of **this** amount of power is left after it negotiates the mismatch between your final and the feedline will (except for the losses discussed above) be radiated.

So, there you are! Forget all about hazy explanations of SWR and reflected power - buy a Smith Chart (or read a decent text on transmission lines) and you too can live peacefully ever after.

PAC-COMM

Amateur Radio Equipment

Packet radio controllers, digipeaters, packet terminal software and accessories

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MICROPOWER-2
TNC-220
DR-100 DR-200
MACKET
MAXPAK-64
PC-100

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Transceiver Remote Controller & 9600 baud modem

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26B Bombala Street, Cooma, 2630 NSW
Phone 064-523112
Fax 064-524317

AMSAT AUSTRALIA

Notes from VK5AGR

Maurie Hooper VK5EA
11 Richland Road Newton 5074

NATIONAL CO-ORDINATOR
GRAHAM RATCLIFF VK5AGR

Oscar 13

The next attitude change to a nominal attitude LON/LAT 180/0 will commence on Monday 12 June 1989 and the new operating schedule to coincide with this change will occur Wednesday 14 June 1989. This change in attitude will not really be for improving solar illumination but rather to have the high-gain antennas earth-pointing at apogee and hence give lower Squint Angles for a larger part of each orbit.

Oscar 10

Please note that from 1 May 1989 Oscar-10's Mode B Transponder will be available for use from MA 25 to MA 225. However, please DO NOT use the transponder from MA 226 through perigee to MA 24 as Oscar-10 will be subjected to solar eclipses from 7 April 1989 to 13 July 1989 varying in duration from 5 to 43 minutes between MA 229 and MA 253. Also, please DO NOT use the transponder if the beacon or transponder signals start FMing. An estimate of Oscar-10's attitude for 1 May 1989 is LON 64 and LAT -27 (extrapolated from the last known attitude of Oscar 10 in December 1986) which equates to a solar illumination of greater than 50%. The solar illumination is not expected to be less than 50% again until some time in early September, and Oscar-10's transponder should be available for use until then. When the current cycle of solar eclipses is finished on 13 July 1989 Oscar-10's transponder will be available for use whenever the satellite is in view except when FMing occurs.

First Flock of Microsats (continued)

INFORMATION NETS
Amsat Australia
Control: VK5AGR
Amateur check in: 0945 UTC Sunday
Bulletin commences: 1000 UTC
Primary frequency: 3.685 MHz
Secondary frequency: 7.064 MHz
AMSAT SW PACIFIC
2200 UTC Saturday, 14.282 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements from the AMSAT Australia net. This information is also included on some WIA Divisional Broadcasts.

Payload Modules

Unused Module

Both LUSAT and PACSAT have an unused module space in location 04. Spacing hardware will be placed in this location so as to maintain the dimensions and thermal characteristics of the MICROSAT.

Eventually, MICROSAT bus may be flown to support customers who need a small space for an experiment of their own, or who require store-and-forward (data collection or communications) capability. This space also opens the way for experimentation and expansion in amateur service satellites as well.

In the event that subsystems under development require more space within the satellite, this module may be used to accommodate parts of the other subsystems. During design and development phases, this option will be used only as a last resort.

Voice Synthesizer and Analog to Digital Buffer/Converter Module

DOVE will contain a voice synthesizer to convert text stored in the computer memory into plain language for modulation of the FM transmitter. The text is stored in computer memory on upload from the ground. Additional text is selected from memory based on computer measurements of various spacecraft electrical parameters, forming a voice telemetry system. After the sequence of telemetry parameters has been repeated several times, the flight computer will interrupt the telemetry sequence and forward a stored voice announcement to the voice synthesizer. After the completion of the announcement, telemetry will resume. This cycle will repeat continuously. However, multiple announcements can be stored and cycled, one after the other, during the announcement window.

Also, a digitized voice or sound capability will be implemented using digital to analog converters. Text or sounds stored in this mode may be reproduced with great clarity.

Announcements in English, Portuguese, Spanish, Russian, and other languages are intended.

Camera Module

The WEBERSAT includes an experimental low resolution camera as its primary payload. Camera control, digital picture storage and compression are all handled by a special module.

The camera module is a collection of experiments designed and built by students from the Center for Aerospace Technology at Weber State College in Ogden, Utah. It consists of module 05 plus an additional extension module unique to WEBERSAT.

The experiments are:

1. A standard miniature colour TV camera modified to operate in a vacuum.
2. A spectrometer sensitive from 300 microns to 100 microns.
3. A 1.265 GHz ATV receiver.

The three experiments interface to a versa-

tile analog waveform digitizer which loads the bank-switched 2 Megabyte memory area.

The digitizer is controlled by the flight computer through the AART. From the computer, any one of the three experiments can be selected as waveform input. Additionally, the sampling rate of the digitizer can be varied from a high rate of 10 MHz to low rates on the order of 2.4 kHz.

The TV camera itself is a Sony Ci-10 product. It produces a standard NTSC analog waveform which is frame synchronized by circuitry on the digitizer board and then digitized at 10 MHz, slightly higher than the Nyquist rate for the 4.5 MHz baseband signal. The pictures are in colour. The CCD element in the camera has a resolution of 780 x 490. With the lends to be used, it is estimated that when the camera is pointing straight down towards the planet, pictures will be of an area of the order of 350 km x 350 km.

The digitized television frame includes all sync signals, colour burst and chrominance information. Digitization takes place chronologically throughout the frame. After storage of the picture in banked memory, it is compressed and archived to the 8 Megabyte area of memory. Pictures will be downloaded in compressed form. Software will be made available for decompression and display of these pictures.

The camera will point out the side of the spacecraft (perpendicular to Z). Given the expected magnetic tumble and solar radiation induced spin, this arrangement provides the maximum sweep of the planet. Positioned next to and on either side of the lens are two small photocells which will act as horizon crossing sensors. They will be designed with a narrow field of view and will be pointed so that their view fields do not overlap. When both sensors are on, the earth (about 135 degrees wide at that altitude) faces that side of the spacecraft, and the lens of the camera. If only one is on, the illumination source could be the sun and picture taking would be inhibited.

It is anticipated that with precise orbital trajectory data and data from these sensors, a good estimate of the tumble and spin profile of the spacecraft will eventually be obtained. Predictive picture taking of selected target areas will then be possible.

The spectrometer is an attempt to provide the spacecraft with sufficient sensing capability to offer substantial educational potential in the area of physics. Spectral reflection from the earth's atmosphere at various latitudes and longitudes is characterized by frequencies of absorption. This data can be used to determine atmospheric components within the field of view of the device. Sample rate of the digitizer with the spectrometer as its input will be variable to support the desired activity. This is important from the perspective of quantity of data gathered for the period of time the spacecraft's rotation permits a given area of the atmosphere to remain in the field of view.

This device will also point out the side (perpendicular to Z) of the spacecraft, but at 90 degrees from the camera. Surface area limitations require this. Two additional horizon sensors will be included on the side of the spectrometer. They will be employed in a manner identical to that described above.

The 1.265 GHz ATV receiver will, when attached to the digitizer with its frame synchronization capability, receive a picture taken on the ground with a TV camera and uplinked in the amateur satellite 23 cm band (1260 to 1270 MHz). Because the format is again NTSC, the storage requirements and overall handling of data on board is identical to that described for the on-board camera. This experiment will permit study of the value of store-and-forward capability as it applies to pictures. It is possible that both the AMSAT and educational community will find this feature valuable as a mechanism for exchanging diagrams and other pictorial data.

Power Module

All MICROSATS include a power module of common design. It is the primary "work horse" of the system. The mechanical module itself is slightly larger than the others so as to accommodate the battery cells. The power module will receive the power from the solar panels and will down-convert the voltage of the arrays (22 V) to the battery main bus voltage of 10 v. It will provide the function of charge regulation for the battery, correcting for array and battery cell temperatures. The current from the arrays will be reduced when the battery is fully charged by adjusting the solar cell operating point. This is accomplished by increasing the array voltage away from the optimum operating point. This technique has been used on all spacecraft since OSCAR-7 and has proved to be a very effective means of preventing battery overcharge.

The solar arrays on the satellite will consist of 20 identical sub-panels referred to as "clips". Each clip contains 20 high efficiency solar cells each measuring 20 mm square (0.79 inch) arranged in a 4 x 5 cell pattern. Five of the six surfaces of the cube contain four clips each. The -Z surface will contain four 10 cell "half clips". The cells are rated to operate at an efficiency of 15.5% at a temperature of 20 degrees C with higher efficiencies at lower temperatures. Plans are to operate the spacecraft at slightly lower temperatures so as to further increase solar cell efficiency and improve battery lifetime. At temperatures of -5 to +5 degrees C each solar cell clip will produce at least 1.60 watts. The side panels of the spacecraft (+x, -x, +y, and -y) will each contain four clips, two series pairs wired in parallel. The top panel (+z) for DOVE, LUSAT, and PACSAT will contain four clips. The top panel (+z) of each spacecraft will also contain four clips, two series pairs wired in parallel.

The power module will include eight 6 amp-hour NiCd battery cells manufactured by Saft or GE/Gates.

These cells will assure adequate capacity to operate continuously during satellite eclipse and can also be used to operate the satellite during peak periods with a negative power budget. The cells will be carefully matched for charge and discharge characteristics to assure maximum reliability and lifetime. The battery main bus voltage will be as high as 11.7 V when the battery is fully charged at ambient temperature and will be as low as 9.2 V at the point of 70% discharge, the maximum safe discharge level.

The transmitter will operate directly from the unregulated battery supply bus at its highest power setting in order to avoid any loss of efficiency due to the regulation process.

The power module will also include two regulated supplies operating at 7.5V and 5.0v. These voltages are needed for all digital equipment and various analog circuitry operating in other satellite modules. The telemetry system will monitor at least 16 voltages, currents and temperatures that power the satellite subsystems.

Satellite Activity for January-February 1989

1. Launches

The following launching announcements have been received:

Int'l Satellite Number 1989		Date	Nation	Period min	Apg km	Prg km	Inc deg
004A	GORIZONT 17	Jan 26	USSR	24h33m	36506		1.3
005A	COSMOS 1992	Jan 26	USSR	100.7	814	777	74.0
006A	INTELSAT 5AF15	Jan 27	ESA	1423.1	35709	35355	0.3
007A	COSMOS 1993	Jan 28	USSR	89.9	382	180	64.8
008A	PROGRESS 40	Feb 10	USSR	88.8	262	193	51.6
009A	COSMOS 1994	Feb 10	USSR	114.1	1442	1403	82.6
009B	COSMOS 1995	Feb 10	USSR	114.1	1442	1403	82.6
009C	COSMOS 1996	Feb 10	USSR	114.1	1442	1403	82.6
009D	COSMOS 1997	Feb 10	USSR	114.1	1442	1403	82.6
009E	COSMOS 1998	Feb 10	USSR	114.1	1442	1403	82.6
009F	COSMOS 1999	Feb 10	USSR	114.1	1442	1403	82.6
010A	COSMOS 2000	Feb 10	USSR	88.8	275	191	82.3
011A	COSMOS 2001	Feb 14	USSR	11h49m	39342	613	62.8
012A	COSMOS 2002	Feb 14	USSR	110.4	2315	187	65.8
013A	USA 35	Feb 14	USA	720.0	20455	20010	55.1
014A	MOLNIYA 1-75	Feb 15	USSR	11h38m	38937	486	62.5
015A	COSMOS 2003	Feb 17	USSR	89.5	271	249	62.8
016A	EXOS D	Feb 21	Japan	n/a			
017A	COSMOS 2004	Feb 22	USSR	105.1	1031	993	83.0

2. Returns

During the period one hundred and twenty five objects decayed including the following satellites:

1979-051A	BHASKARA	Feb 17
1988-110A	COSMOS 1984	Feb 13
1988-114A	PROGRESS 39	Feb 07
1988-116A	COSMOS 1986	Feb 11
1989-002A	COSMOS 1990	Feb 11
1989-003A	COSMOS 1991	Feb 01

3. Notes

1988-059A PHOBOS 2

The interplanetary station PHOBOS was changed to an elliptical Mars orbit on January 29 1989.

Orbital paramaters are:	Period	76.5 hr
Apoapsis	79750 km	
Periapsis	850 km	
Inclination	1.0 deg	

1989-008A PROGRESS 40

This satellite carried expendable materials and various cargos for the orbital station MIR. It docked with MIR on February 12 1989. BT

Information compiled by Bob Arnold VK3ZBB

VHF/UHF AN EXPANDING WORLD

All about Six!

Eric Jamieson VK5LP
9 West Terrace, Meningie
5264

All times are Universal Time Co-ordinated indicated as UTC

Beacons On Six Metres

Freq.	Call sign	Location	GridSquare
50.000	GB3BUX	England	IO73
50.005	H44HIR	Honiara	QIØØ
50.005	ZS2SIX	South Africa	KF25
50.011	JA2IGY	Japan	PM84
50.013	P29BPL	Port Moresby	QI3Ø
50.015	SZ2DH	Greece	KM18
50.017	JA6ZIH	Japan	PM51
50.020	GB3SIX	England	IO73
50.020	CX1CCC	Uruguay	(1)
50.025	6Y5RC	Jamaica	FK17
50.028	JA7ZMA	Japan	QMØ7
50.029	CTØWW	Portugal	IN61
50.032	ZD8VHF	Ascension Island	II22
50.035	ZB2VHF	Gibraltar	IM76
50.035	ZS3VHF	South Africa	JG87
50.039	FY7THF	French Guyana	GJ35
50.045	OX3VHF	Greenland	GP60
50.048	TG4BFK	Guatemala	(1)
50.050	GB3NHQ	England	IO91
50.050	ZS6DN	South Africa	KG44
50.057	TF3SIX	Iceland	HP94
50.062	PY2AA	Brazil	GG66
50.064	WD72	Arizona	EL59
50.065	GJ4HXJ	England	IN89
50.065	NB3O/1	Rhode Island	FN41
50.066	VK6RPR	Perth	OF78 (3)
50.063	KH6HI	Hawaii	BLØ1 (2)
50.075	VS6SIX	Hong Kong	OL72
50.078	TI2NA	Costa Rica	EK70
50.080	KH6JJK	Hawaii	BL11
50.080	HC8SIX	Galapagos Is.	EI59
50.085	9H1SIX	Malta	JM75
50.086	VP2MO	Montserrat	FK86
50.088	VE1SIX	Canada	FN65
50.090	KJ6BZ	Johnston Is.	AK56
50.092	W5GTP	Louisiana USA	EM4Ø
50.099	KP4EKG	Puerto Rico	FK68
50.100	HC2FG	Ecuador	FIØ7
50.100	5H1HK	Tanzania	(1)
50.110	KG6DX	Guam	QK23
50.110	A61XL	United Arab Emir.	LL74
50.120	4S7EA	Sri Lanka	MJ97
50.321	ZS5SIX	South Africa	KG5Ø
50.490	JG1ZGW	Tokyo	PM95
50.499	5B4CY	Cyprus	KM54
52.100	ZK2SIX	Niue	AH5Ø
52.200	VK8VF	Darwin	PH57
52.310	ZL3MHF	Christchurch	RE66
52.320	VK6RTT	Wickham	OG89
52.325	VK2RHV	Newcastle	QF57
52.330	VK3RGG	Geelong	QF21
52.345	VK4ABP	Longreach	QG26
52.370	VK7RST	Hobart	QE37
52.420	VK2RSY	Sydney	QF56
52.425	VK2RGB	Gunnedah	QF59
52.435	VK3RMV	Hamilton	QF12
52.440	VK4RTL	Townsville	QH3Ø
52.445	VK4RIK	Cairns	QH23
52.450	VK5VF	Mount Lofty	PF95
52.460	VK6RPH	Perth	OF78
52.465	VK6RTW	Albany	OF84
52.470	VK7RNT	Launceston	QE38
52.485	VK8RAS	Alice Springs	PG66
52.510	ZL2MHF	Mount Climie	RE78

(1) New beacons

With the advent of so much TEP and F propagation, a number of six metre beacons not currently listed above, have appeared during band openings. Their status is unknown, and a number can be found between 50.060 and 50.080 and include K6FV, K6MYC and others.

(2) This beacon has also been observed on 50.072 MHz.

(3) Correction to call sign.

Six Metres

Once again six metres must take pride of place in the log books of a vast army of world operators. Speaking to one well known two metre operator the other day, I asked him if he had noted anything of importance on two metres and above, and his reply was a simple statement that he did not know, he had not been looking there, as six metres occupied all his available time!

As I started on six metres when Cycle 19 was on the wane I cannot draw any direct comparison between that Cycle and Cycle 22 but Hugh VK5BC who has been on the bands for a long time said he believed Cycle 22 would eclipse Cycle 19.

Six Metres for April

The present name of the game is to try and interpret the meanings behind the solar flux counts issued by WWV and IPSO. The actual figures appear to vary according to the time of day you actually take the reading, but throughout February there were some very high counts, with my list showing 277/14 on 9/2, 279/12 on 10/2 and then with up and down fluctuations until a major drop to 214/6 on 18/2. The main effect as far as VK5 was concerned was to produce many strong North American paging signals between 40 and 45 MHz with little else but in VK2 and VK4 stations worked W6 and XE on 9/2.

The high count of 270 on 14/3 brought W5, 6 and 7 to VK5 and the eastern States, while Easter Monday 27/3, with a count of 164/42, brought a number of stations from the Caribbean area to VK5, including P43AS on the island of Aruba, who said he was using 10 watts for a 5x9 report! David VK5KK stretched his signal to PP5JM in Brazil.

5/4 say ZF1RC from Cayman Is. with a count of 191/30. On 14/4 it was XF4L at 5x9 for a count of 196/12. On 27/4 a good opening to W5 for two hours from 2320. While this represents the cream of the openings at least to VK5, what about the times the Mexican stations XE1GE and XE1MD have been worked, almost a daily occurrence at times, starting soon after mid-March right through to the end of April. I recall a similar situation during Cycle 21 with Geoff

XE1GE. Often, they are there, but no other nearby areas.

What this leads me to say is that simply, there is no infallible pattern for predicting openings, a close watch on solar counts is a help, but now and again that lets you down. The most successful way is to spend all your time in the shack, and few can do that to the exclusion of all else. Consequently everyone is going to miss some exotic contacts, no matter how vigilant they are, but that only serves to make the band more interesting. No doubt the scientifically minded will come up with some answers but hopefully more accurate than the article published a few years ago predicting absolute doom for Cycle 22 and probably for the rest of this century. How wrong you can be!

1/4: 2303 H44GR to VK5ZK. 2/4: 2326 VK5ZK worked KX6DS, KG6DX, and heard 3D2ER, 5W1GP and followed the next day by working T3ØDJ at 2316, KX6DS, then YCØUVO 5x9 at 0225. 5/4: 2313 to ZF1RC Cayman Island at 5x5. 6/4: 2200 (5/4 UTC) XE1MD, XE1GE to 5x6. VK5ZK worked three W5s on CW and W5OZI on SSB from 2235. VP5D beacon heard at S5. Next morning at 2345 UTC (6/4) to Geoff T2ØJT on Tuvalu, who reported working that day to VK2,3,4,5,8 and 9! QSL via W6JKV. A strong opening to Japan during which at 0301 Roger VK5NY and VK5RO nabbed KB6FIQ/DU3. Later in the day at 0802 KH6HI 5x9 to VK5LP and others, also at 0909 HL1FF to VK5ZK and VK5KK. Also learned that Dave, KX6DS from the Marshall Islands, would close down on 24/4 and return to the U.S. Worked here on 2/4 so got him just in time. Dave said he had had more than 3000 QSOs on six metres from June 1988 to April 1989, plus more than 600 whilst in KC6 in November 1988.

8/4: Kerry ZL7TPY (ZL2TPY) mounted a DXpedition to Chatham Island for two weeks. Available in VK5 with 5x9 signals on 15, 16 18, 19 20, 21, and doing battle with the Mexican stations. YCØUVO heard by VK5ZK at 0232. Mount Gambier stations were working JAs, via the long path over the South Pole, at 1240.

7/4: VK4BRG to 5H1HK via CW - good contact that, but no DU, VS6 or YCØ. Apparently TI and HP3 were almost daily contacts to Queensland.

12/4: ZL7TPY heard working Caribbean and W stations around 2200. VK5ZK worked two JR6 stations in Okinawa from 1300.

13/4: Kerry ZL7TPY to Jim T2ØJT at 2200, then working W6s at S9 plus. The next day (14/4) worked JAs. XE1GE to VK3 and VK5 at 2200. At 2255 VK8 worked HP3. At 2332 I worked WA6BYA at 5x5, then a scratchy contact to XF4L at 2335. Roger VK5NY to K6QSY, 14/4: VK5ZK to XE1GE on CW at 0000.

On 15/4 at 0007 VK5BC worked XF4L and VK3. VK3s also worked ZF1RC. The UTC morning of 15/4 was particularly lively commencing at 2150 with ZL7TPY heard on backscatter while working W7s and 3D2ER. Then Raj 3D2ER was 5x9 into VK5 at 2203. He stayed in for so long that he ran out of stations to work! At 2220 VK8ZLX snared Henri FK1TK at 5x9, at 2310 Garry VK5ZK worked T2ØAA on CW and at 2328 XE1MD was heard working 3D2ER. At 2330 H44GP was 5x9, 2232 ZL7TPY 5x9, then of course XE1GE who reported hearing VK9YQS on Macquarie Island. The same morning at 2351, VK6RO and a few other Perth stations worked WA6BYA at 5x5, which made them very happy. The K6FV beacon was also heard in Perth.

16/4: At 2200 K7RWP reported via 28.885 that he was hearing ZL video. At 2300 XE1GE and XE1MD to VK5NY, VK5ZDR, VK5RO, VK5LP, VK5ZK, etc. Garry VK5ZK heard the Cuban station CO2KK at S2, who was using a 40 meter dipole for an antenna! Col VK5RO reported the Cuban returned Garry's call, but he was not heard by VK5ZK. CO2KK was worked by David VK2BA at 2200 at 559.

17/4: XF4L started at 2330 at S9, and was still going strong at 0120 (18/4 UTC) at 5x7, when he ran out of stations to work. The next morning started with XE1GE and XE1MD at 2200, XF4L at 2205 at S3. Stations from VK1,2,3,4,5 and 8 with good backscatter signals. At 2345 a Spanish speaking FM station was heard on 50.100, and was not particularly pleased, and said so, when invited to a QSO! The station has been heard on a number of occasions with signals to S5. Any ideas? ZL2KT heard the Gibraltar beacon. ZL7TPY worked W1FC/FS7 and VP5D and these would make Kerry very happy! At 0200 VK5NY to XF4L at 5x2.

19/4: XE1GE and XE1MD again plus at 2355 XE1OT at 5x7. The conditions extended through to the 20/4 UTC day, and at 2200 Steve VK3OT worked ZK1XH, and then called V21PC, finally making it at 2330 with a 5x4 report. At 2226 V31PC was worked by VK2BA, then at 2255 by VK5NY and VK5ZDR with signals at S2. V31PC was operating with 5 watts to an indoor dipole - no wonder he was less than S1 at Meningie! At 2305 worked ZL7TPY, who said he had made 776 contacts, whilst on his DXpedition to Chatham Isx, Kerry also said he had copied the ZB2VHF beacon via the long path for 25 minutes from 2050. At 2345 it was XE1GE again. Late in the afternoon there was strong FM on 49.923 on 38.0 and 38.4 MHz, and appearing to DF in the direction of Africa. Jack ZS6LN reported via 28.885 that weak signals from VK direction were copied between 0700 and 0730. Jack running a keyer on 50.100 from 0645 to 0715.

21/4: Started at 2300 with VK1RX working XE1GE, then at 2316 ZL7TPY was 5x9 plus. Kerry reported hearing the OX3VHF beacon at 2200. Then Tai ZL7TZ cam on for another ZL7 contact. XF4L had made 160 contacts on six metres. V31PC worked by VK5BC, VK5ZDR and VK5NY from 2225. S1-2 at Meningie and Goolwa.

It was about this time that conditions were showing signs of tapering off. Fewer stations were appearing, and for shorter periods. On 26/4 at 0747 KG6DX at Guam was 5x9. At 2340 KA5ULI, KE5CO and KA5VMC were worked on CW by VK5ZK at 2340. From 0030 KH6 at 5x9.

Then through to 27/4 UTC day and at 0001 a 30 minute opening to W5 when WA5AAK, WB5GDN, KB5AMZ, WD5HRI, KA5VMC and KE5CO were worked by the usual gang of VK5NY, VK5ZK, VK5RO, VK5ZDR, VK5BC and VK5LP but there may have been others. Paul KE5OC was strongest here at 5x7. At 0043 Virg KH6JJI was 5x5, and VK5LP worked him using 6 watts. At 0237 KH6HI was S2 in VK6. At 2230 VK3OT to W4SM with signals to S9 plus. At 2240 VK4BRG reported working TI2KD and TI2HL. At 2242 VK5NY heard W6.

28/4: 2230 to 3D2ER at 5x7 and heard 3D2AG. 29/4: from 0058 a good opening to W5 with Garry VK5ZK working N5HVJ, N5JM, W5VAS, WB6GDN, KB5AMZ and finally K5GE at 0122. I missed that opening, but the W5s were also worked by VK5RO, VK5NY, VK5ZDR and possible others locally. At 0255 KH6JJI 5x5. 2325 FK1TK was S2 for ten seconds; at 2332 3D2ER who said he had just worked a 9Y4.

On 2/5 during the evening YBØARA was very strong into VK8 for an extended period.

Throughout all these happenings, the JAs with their courteous operators are available on a daily basis, and can be there during the day and/or the evening.

Garry VK5ZK spent a month at his DX palace at Goolwa, and on his first day 27/3 broke the ice with XE1GE at 2252 and P43AS at 2313. At 2322 KP2A, 2327 KP4A with signals to S9 Plus. At 2312 on 29/3 Garry worked T3ØDJ on Cw, 0406 V85DA, who was running 10 watts, 0513 H44HIR beacon S9, 0603 KG6DX on CW.

1/4: 2310 KG6DX and received a report from Tom VK4DDG that he had worked ZK1, PJ, KH6, P43, HL1, T3Ø, WS, FO, KG6, YS1, TI2, HP3 and JAs. 2/4:

Although VK5 has shared in working the majority of exotic stations, it is recognised that the eastern States have better chances to work those coming from the east. We may only have one or two opportunities for a rare one, whereas the same station may present itself to the eastern States many more times. However, we are not grumbling, we console ourselves by thinking of the VK6s and their lack of contacts.

Other Six Metre Reports

Since moving to Meningie I had never fired up the old FT101B into the 'sloper' antenna on 28.885 but at 0250 on 28/4 I responded to a call from my friend Graham VK6RO with signals 5x5 both ways.

Graham reported that JAs into Perth were an almost daily occurrence, and mentioned what good operators they were, very tolerant and pleasant. Graham also said that video was heard most days on 48.264 to S5 from a westerly direction. He hopes their general vigilance in Perth will result in one or more contacts to ZS6. So far the Perth boys report hearing a little CW on two occasions from the South African direction. The ZS6 operators work KH6 with some regularity by beaming over Australia!

At 0624 on 25/3 VK6RO worked V85DA for a first contact, and on 28/3 at 0309 he worked KH6IAA at 5x9, and using a simple half wave vertical antenna! He also heard K6MYC and WB6VYH. ON 29/3 YCØUVO was heard via side scatter whilst he was working VK30T.

On 1/4 he worked KG6DX and V85DA; 2/4 KEØSC/DU3; ;3/4 KG6DX and heard the H44 beacon; on 6/4 T3ØDJ to VK6RO and VK6HK. Plenty of HLs and JAs.

15/4 was his red letter day when he worked WA6BYA at 2351 at 5x5 and heard the K6FC beacon. Several Perth stations also had contacts. On 16/4 at 0244 KH6JJI at 5x7; 17/4 to

KG6DX; 18/4 at 0112 heard XF4L. (This does not surprise me as XF5L was 5x9 plus in VK5 for some time.....5LP). On 19/4 FK8 and H44 heard, also K6MYC and K6FV beacons. 27/4: KH6HI beacon in from 0115 to 0550. The beacon was heard at S2 by VK6MR mobile. Graham VK6RO has now worked 13 countries.

VK6KXW reports 17 countries have been worked in Perth, so it appears they have not been too far out on the proverbial limb - but there would be countries they have worked that those to the east have not and vice versa. Thanks Graham.

Mt Isa

Steve VK4KHQ reports that he had had five RTTY QSOs on six metres with Yutaka JH1WHS since 26/3 with signals to 599. Yutaka says he has had RTTY QSOs with VK4s FXX, FXZ, RO, KHZ and ZRO. He operates at 1100 UTC on 52.045 LSB, AFSK, 50/45.45Bd, 170 Hz shift and using an Apple II computer, model 15 printer and homebrew interface, running 20 watts into 10 elements at 20 feet.

VK4KHQ uses his TONO 7000 as an RTTY keyer instead of CW, but so far has had no other contacts. Steve has built a six element beam, and finds an improvement of three S points over the dipole, but has difficulty coming to terms with the narrow beam-width, so still uses the dipole and switches to the beam when needed.

A list of Steve's contacts since January is intriguing, because, apart from JAs he has not worked any other stations but VKs and ZLs, but I suspect it will be necessary to make greater use of the new beam.

January: ZL3AUU, ZL2KT and ZL3MHF beacon. 3xVK1, 4xVK2, 3xVK3, 3xVK4, 6xVK5, 2x VK8, no JAs or VKØ, 6 or 7.

February: 1xVK3, 4xVK4, no JAs.

March: 2xJAØ, 11xJA1, 3xJA2, 1xJA6, 1xJA9, 1xVK4, 2xVK5 and VK8 beacon.

April: 6xJA1, 2xVK4 and JAs nightly to about 1115 UTC.

Report From Fiji

Phill FK1TS reports that, through February and March, six metres has been open every day with JAs on a regular basis. On 6/2 at 0153 he had four W6 contacts and on 9/2 from 0130 a further seven.

Phill worked to W land during March on 1,25,7,9,18,19,20,22,23,24,25,26,27, and again on 1/4. His total contacts were 120 from January to March. JAs worked included 130 on 23/2, 50 on 4/3, 30 on 6/3, 60 on 22/3, 110 on 23/3, 70 on 24/3 and 120 on 1/4. There were many occasions with 20 to 30 contacts! KH6 contacts featured on many days, including a 5x7 report from KL7WE/KH6 who was sitting on the beach at Waikiki using an IC5Ø2!

Additional good contacts included XE2GBO on 2/3; on 6/3 KX6DS; on 23/3 at 0834 BY4RB; on 25/3 at 0045 ZK1WL in the northern Cook Islands and PE1MVJ/MM; 27/3 at 0601 HP3XUH; 28/3 at 1950 PJ9JT. ON 29/3 Phill worked ten countries - TI2KD, HP3XUH, YCØUVO, KG6DX, KH6, BY4RB, T3ØDJ, P29PL, JA8 and VK4.

Phill had a red letter day on 1/4 starting at 0002 with K7IS then a string of W6s, followed by VK8ZLX, FO4NK, KG6DX,3D2ER, ZK1WL, 5W1GP, ZA2XX, HL9TG, KH6, PJ9EE, DL3ZM/YV5, P21AP and to round off the day for a 14th country he worked 120 JAs! Quite a day's effort.

What should interest VK stations is that, despite FK1TS being so much closer to the US, Phill has worked W5, W6 and W7 for all contacts, except for two W8s, which is very similar to results obtained in VK. Do the States of W1,2 and 3 always look to Europe?

The New South Wales Scene

David VK2BA sends a comprehensive letter, and remarks on the sheer quantity of DX which has been available for working, especially from the Central American/Caribbean region.

Since 1 March 1989, David has worked 34 countries as follows: FK. VP5, TG9, VP2M, KP2, 3D2, JA, KG4, TI1, KP4, ZF1, VK6, W4,5,6,7, P43, KG6, YV5, YBØ, ZK1 (South Cook), ZL, KH6, FOØ, 5W1, T2Ø, HL, CO, YS1, PJ9, XF4, ZK1 (Nth Cook), XE, T3Ø, V85, HI8 and KX6. His overall countries now total 50, which is an outstanding effort and indicates a dedicated operator.

During Easter, David operated portable from Walters Trig about 2km from Nev VK2QF, and believed that for the first time Nev encountered real QRM! As David was involved in a Scout Camp, he had limited operating time, but managed to bag WA6BYA, JA8UDE, JHØBBE, JE3TMS, JE1CCD, VP5D, KG4SM, WB4OSN, XE1GE, P43AS, and K6QXY.

David had a good day on 11/3 with 44 contacts to W6 and 7 plus FK1TK. On 18/3 David worked five countries: JQ1, WA6, FK1, KG6, KX6; on 28/3 six countries: KH6, JR8, ZK1, WA4, T39DJ, TG9AWS; on 1/4 ten countries: K6, V85, HM4, JA1, XE1, VP2M, KP4, YV5, 5WI, TG9; on 2/4 thirteen countries: KX6, ZK1, TI2, JA8, FK8, KH6, VP5, VP2, PJ9, KP4, HI8, KP2, ZF1. On several other occasions, David worked six and seven countries.

David is making available a list of QSL addresses for quite a number of rare stations, and this is available for a stamped addressed envelope of a size suitable for A4 paper.

He requests feedback for corrections to information, or additional addresses, and will produce updates as new information becomes available. Thanks David for your interesting letter.

Nev VK2QF from Hargreaves also writes with an indication of working 32 countries this year, for an overall total of 47 countries. He said that the conditions have been exceptional, and as predictable as Cycle 21 in relation to the timing of openings. The Caribbean/W4 path opens from 2100 to 2150 and usually closes around 2230. The Central American path opens about the same time, but can extend until 0000 or until 0230 at times.

On 25/3 Nev called CQ at 2144, and gave VP5D and KG4SM their first VK contacts! He then went on to work W6. ON 28/3 he worked 13 W4s, ZK1WL (first VK), XE1GE, T3ØDJ and JA. In the three day period 31/3 to 2/4 Nev worked JA, KH6, ZK1, XE1, YS1, TG9, W6, YCØ, V85, HL4, KX6, DU3, PJ9, KP4, YV5, 5W1, 3D2, FO5, VP2, KP2, ZF1, T3Ø and heard 8R1AH. That's an impressive total of 23 countries!

Melbourne

Gil VK3AUI writes to say that Melbournians have had a great share of recent DX, and that he was pleased to work Doug VK9YQS/Ø on 20/3, and to learn that he has been worked by a number of countries including JA and W. The interest displayed from Macquarie Island may lead to some future operating from there on 144 and 432 MHz, which should be within operating range.

Gil has snared six new countries this year - P43AS, KP4A, KX6DS, T20JT, XF4L and ZL7TPY for a current total of 27 countries. Several good days were 26/3 for P43AS, XE1MD, KP4A, W5UWB and heard VP2A; 14/4 3D2AG, SF4L, WA6BYA; 15/4 XF4L, JAs, ZL7TPY, 3D2ER, H44GP.

Gil comments that the XF4L and T3ØJT DXpeditions were very good with expert operators. That comment triggers a thought which has been in the VK5LP mind, that some VK operators could take a leaf from the operating books of DXpeditions operators. They never waffle on, and so are able to conclude two or three contacts per minute if necessary, providing the operator at the other end is equally cooperative. My contact with ZF4L lasted 20 seconds, and in that time we exchanged and confirmed signal strength reports, locator squares and names. That was all that was necessary. I subsequently noted some operators were holding up the operations for two or three minutes, whilst they mentioned rig and antenna details, whilst others were waiting on the sidelines for contacts. For rare contacts, fast exchange of information is necessary - if you are one of those at fault and possibly consistently so, how about getting your act together and make room for more stations to share the rare stations.

Closure

Nothing to report for 144 and higher bands; everyone seems to be congregating on six metres and making the most of the good conditions through the equinox.

In response to several requests, I am gradually compiling a list of countries with six metre operating privileges, and hope to publish this soon. This may assist in the identification of stations, and for determining in which direction to point the beam at different times of the day.

Closing with two thoughts for the month: "If you can tell the difference between good advice and bad advice, you don't need advice", and "In many places nowadays, risking life and limb with fireworks is illegal. You have to use a motor car!" 73. The voice by the lake.

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DATA & DIGITAL COMMUNICATIONS

Basic Packet Commands

Brian Beamish VK4AHD
AsiaNet Coordinator
SysOp VK4BBS PBBS
35 Chester Road
Eight Mile Plains 4113

Thanks to all the favourable comments and to those who took the time to either write, phone or send a packet message, telling me what they would like to see within this column. Thanks also to those few, including G3PLX and KX6HE who amongst others have offered to contribute articles amongst them some on TCPIP, RTTY, AMTOR, FAX and Satellite digital communications etc. If you can help or know of any one I can approach please do. Readers please keep those enquiries and suggestions flowing in.

I noticed some very interesting Bulletins around the Packet Network since last I wrote. Some included interesting information on the new satellites, 4 of them to fly later this year. Another bulletin I found interesting was one from Roman VK0MP on Casey Base in Antartica. There is also a group playing chess world wide by packet and a very interesting series by Steve VK4FEA on Lightning Discharge.

During the past few weeks I have been experimenting, together with Eddie DU1EAG and Roy JA2IKL, with forwarding on HF PSK. We have found that after the initial setting up period and trials that we are now able to forward around 90% of a traffic on HF by using PSK at 1200 baud, PACL 128 and MAX4. Quite an improvement on the 300 baud FSK. Whilst more experimenting is still required I envisage that we may see a lot more PSK forwarding being carried out in the future. A future article will go deeper into PSK etc. Incidentally JA2IKL, DU1EAG and myself believe we are the first ever to forward VK-DU, VK-JA and visa versa using PSK 1200 packet. We could also hold the PSK distance record also for regular 1200 baud PSK forwarding, although this record is yet to be confirmed.

Well this month I have a Packet Radio User guide for you. I suggest that if you are new or experienced packet operator, you keep this guide beside your terminal. Table 2 is a handy reference guide that you may like to copy and stick on a card, for quick handy reference.

Please note that the address for the AARTG. (Inc) that was published in my last article, has changed, and is incorrect in the Call Book also. The new address is: AARTG (Inc.) PO Box 97, Cannington, WA. 6107. Please kindly use this address and not the one in the Call Book.

My thanks must go to the Rocky Mountains Packet Radio Association for the work and effort that they put into an article, which was the basis for the one you are about to read.

Packet Radio BBS User Guide

The first time on your local BBS you will probably see "Please use N command". Well then, enter your name as:

N Brian

and the BBS will come back to you like "Oh hello Brian". Now each time you connect you will find that the BBS is not so impersonal after all.

Help Commands

Information about the system and how to use it.

Command H or ?

Help - Gives general HELP with all system commands. It is not context sensitive - it always gives the same answer regardless of where you are in the system. If you have this guide this should not be necessary.

Command ?

Detailed HELP with individual system commands for example "?U" for HELP with uploading the descriptions in this guide are similar to those you should get with this command.

Message Commands

Commands are used to read or send messages or bulletins. Messages are referred to in every command by number, which you can find out by using the LIST command.

You will not see any text until you use the READ command.

The first time you log into a PRBBS, you may wish to list all the messages, but PLEASE do not list all the messages each and every time you log on.

There are several variations of the list command that we will go into later.

Table 1 shows a sample message list.

Msg	TS	Size	TO	@BBS	From	Date	Subject
24767	PN	398	N6VV	@W6HTH	VK4SF	02-May	NO RF CAD
24766	PN	456	DU1EAG		VK4BBS	02-May	PSK tests
24767	PY	789	VK4BBS		VK2BBD	02-May	Thanks for Info
24580	B$	1267	ALL	@ASIA	VK1KCM	03-May	Compression discussion
24591	P$	2300	SYSOP	@ASIA	VK6AGC	04-May	Header Stripping
25001	P$	2956	ALL	@AMSAT	VK5AGR	04-May	Amsat Bulletin
25123	PY	234	VK2OP	@VK2EHQ	W6HTH	04-May	New design HF Antenna

Table 1 - Sample BBS message list

Msg - This is the message number. You will use this number in other commands such as READ or KILL etc.

T (Type) - The message type: P Private messages that can only be listed or read by the sender, receiver or SysOp.

S (Status) - This column contained the N not read yet, Y has been read and $ Bulletin ID Indicator

Size - tells you how big the message or bulletin is in Bytes.

To - Who the message is being sent to, generally it will be to a call sign, SysOp or ALL.

@BBS - This indicates another BBS the message is to be sent to, or can also indicate the type of Bulletins. For example @IBM, @AMSAT, @ASIA or @VKNET would mean IBM Hardware or software bulletins, Amsat Satellite traffic, Bulletin traffic intended for the ASIAN area and Bulletin traffic intended for VK.

From This is set automatically to the call of the station sending the message.

Date - The date that the message arrived on the particular BBS you are looking at.

Subject - A description of what the message is about. It is very often used to indicate a town, city or other information that will help SysOps get the message where you want it to go.

You have seen the word SysOp several times. Now SysOp is the name given to the System Operator, or in other words, the chap running the BBS that you are using.

List Commands

Command: L

LIST new messages - List any new messages that have been received since you were last on the BBS.

Command: LM

LIST MINE - List only messages to you

Command: LN

LIST NEW - List only new unread messages to you

Command LL x

LIST LAST - List the most recent number of messages for example LL10 will list the last 10 messages.

Command: L x

LIST from - List only messages above a number. L 2345 will list all messages above 2345.

Command: L x y

LIST From To - List a group of messages. For example L 2000 2075 will list all messages from 2000 to 2075.

Command: LB or LP

LIST TYPE - LB Lists bulletins. LP Lists private messages (although you will only see those sent by you or for you) you can also use LB x y or LP x y etc.

Command: L@ (@BBS)

LIST @ - for example L@ ASIA will list all traffic @ Asia, or L@ VK4XBB will list all traffic for the VK4XBB BBS.

Command: L> callsign

LIST TO - LIST all messages sent to a particular station. For example, L> VK3AVE will list all traffic for VK3AVE.

Command: L< callsign

LIST FROM - List all messages from a particular station. For example, L< VK6AGC will list all messages from VK6AGC.

Read Commands

Command: R x

READ - Read message x (number) up to 6 messages per line. R 200 240 367 412 would read those four messages.

Command: RM

READ MINE - Read all messages addressed to you.

Command: RN

READ NEW - Read all new messages for you.

The messages read with R will have any standard forwarding headers automatically stripped, regardless. This information is not normally required, or of any use to the user. To read the entire message, you may use the V (Verbose) versions of the above R commands.

Kill Commands

Command: K x

KILL - Kill a specific message. Only the sender, receiver or SysOp can kill a message. You may have up to 6 messages per line.

Command: KM

KILL MINE - Kill all messages sent to you, that you have read. This will not kill messages sent to you, that you have not read. PLEASE kill all messages that you no longer need on the BBS.

Send Commands

Command: SP callsign

SEND - Send a personal message to a "callsign".

Command: SP callsign @ callsign

SEND VIA - Send a personal message to a "callsign", via another BBS, by automatic message forwarding. For example, VK2FEX @ VK2XY. Typically, once the message is forwarded from one BBS to another, the sending BBS will kill the forwarded message.

Command: SB ALL @BBS $

SEND BULLETIN - Send a general bulletin to all SysOp at a BBS or category. For example, SB ALL @ VKNET $ will send a bulletin to all BBSs in VK. SB ALL @ C64 $ will send bulletins to all those BBSs who have indicated that they want Commodore C64 bulletins.

Command: SP SYSOP @BBS $

SEND BULLETIN - Send a private bulletin to all SysOp at a BBS or category. For example SP SYSOP @ ASIA $ will send a private bulletin to all SysOps in Asia. NOTE: you can only send a private bulletin to SYSOP.

After you have told the BBS for whom the message is intended, it will ask you to supply subject information. I suggest here, that if there is any possible doubt as to where your message is going, that you omit the subject material. Instead, supply in the small space allowed, as much information as possible that will help the SysOp get your message to the correct BBS, anywhere in the world. You will be then asked to enter your message. When you are finished, you must terminate your text entry by sending a CTRL Z. Some computers are unable to send a CTRL Z. In this case, place the command (/EX) on a SEPARATE LINE.

If you are going to send a rather long message, it is a good (excellent) idea to compose the message off-line with a word processor, or even a simple text editor. Then connect to the BBS, execute the send command, enter the title, and send the precomposed message text to the BBS. You could even include the send message command, and message title, in the precomposed message, as the first and second lines of the message. Add /EX as the very last line of the message, and you can completely automate your message forwarding.

Please Note:

It would be appreciated by all SysOps, if you do not send messages much over 2.5k long. If your message is going to be longer, by all means please send it, but send it in parts of about 2.5k long. For example, if your message is going to end up about 8k long, you would break it up into three messages, each about 2.7k long.

File Commands

The following commands deal with data files, which generally contain text material (AMSAT Bulletins, QARDATA News, VK Maps etc etc) or even programme files etc.

Command: W

WHAT Files - List of Data files available on the BBS. Recall these file's names are in the xxxxxx.yyy format, so you may use wild cards. For example W *.DOC will list all the files with the extension .DOC (Documentation).

In the file list, you may also see file names followed by the designation <DIR>. This indicates a file subdirectory, which will contain a number of additional files. Usually, files that are related will be placed in a subdirectory. All AMSAT Bulletins might be placed in a subdirectory called AMSAT. To list the contents of a subdirectory, enter the W command followed by the subdirectory name. W AMSAT will list all the files in the AMSAT subdirectory. Many subdirectories will have a 'README' file, which may give you information about the files in that directory.

Command: WN

WHAT NEW - List all new files since you last logged on.

Command: D Filename

DOWNLOAD - Transmits a file from the BBS to you. For example, D USER.DOC will download the file called USER.DOC to your terminal. It is advisable to leave the capture buffer open to receive the incoming file.

If a file you are downloading is in a subdirectory, you follow the subdirectory name with a slash. For example, D MAP/VK4.MAP will download the file VK4.MAP from the MAP subdirectory.

Command: D Filename x

PARTIAL DOWNLOAD - If 'x' is 10, you would see the first 10 lines. If 'x' is -20, you would skip the first 20 lines. If 'x' is 5 space 15, you would see line 5 to 15. All this is valuable if you want to preview a file before downloading it.

Command: U filename

UPLOAD - Send a file from you to the BBS (opposite to the D command). The file naming convention is the same for uploading as it is for downloading, including the subdirectory name if any. Terminate the upload by sending CTRL Z. For example, to upload the VK Amateur Ham schedule, type U EXAMSCH/VKD.SCH.

One danger in uploading to the BBS, is that you could use up all the remaining space on the System. This can crash the system, since the mail, user and log files etc. need room to expand. Please ALWAYS check to see that you have enough room with the W command, before uploading something.

Please note that the sysop is the only one who can kill a file.

Other Commands

Command: A

ABORT - Abort a listing, long message or file etc.

Command: B

BYE - Please log off a BBS correctly, by using the B command. Note that you will be logged off automatically, if there is no response to a menu in 4 minutes.

Command: J

CALLS HEARD - List of calls heard, or connected to etc.

Command: JK

CALLS CONNECTED - List of users who have recently connected to the BBS.

Command: Ja

Calls Heard - on TNC 'a' Type A,B,C,D,E or F for up to 6 TNC's. This command may vary slightly from one BBS to another.

Command: N

NAME - Enter or change your name.

Command: T

TALK - Pages the BBS SysOp for you. If the SysOp is available for a chat, you will get a response within one minute, otherwise the BBS will advise you to leave a message for the SysOp.

Command: V

VERSION - Shows the specific version of the software used on the BBS.

Command: E

EXPERT - You can change your status to expert and the menu will give you a short prompt etc.

Command: Y

YAPP - Binary transfer programs, more on this in another article.

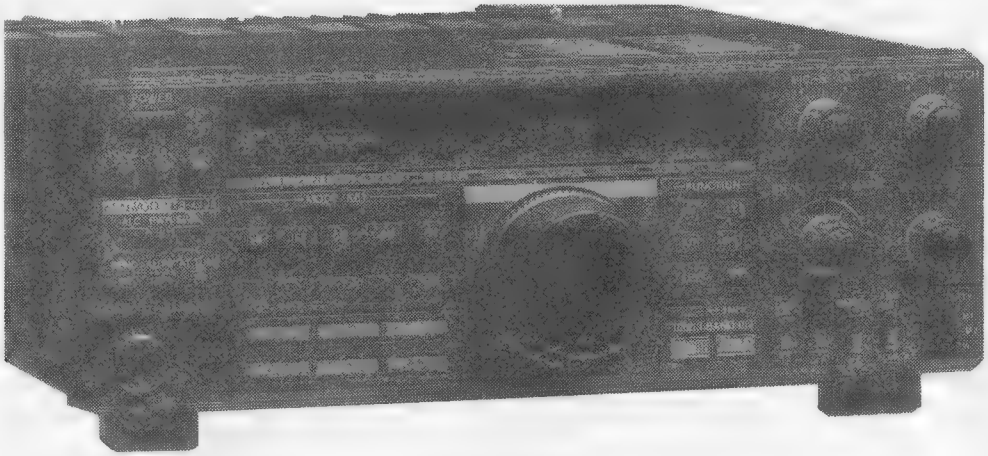
Forwarding

Automatic forwarding of messages to other BBS, adds a new dimension to packet message handling. It allows mail to be passed between BBS's automatically, according to a predefined list.

Each BBS has the capability to maintain a list of all stations, and their "Home" BBS. When not connected to another user or BBS, the BBS checks the mail file each hour, for stations with mail on the forwarding list. If there is mail to any user on the forwarding list, and it is the proper time to forward to that station, the BBS goes off line and connects and forwards with other BBSs.

SP ALL @ VKNET $

KENWOOD



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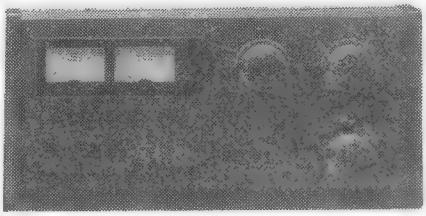

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Each BBS in the network is assigned a forwarding time - a certain number of minutes after the hour. These are coordinated, where possible, to prevent any two stations from trying to forward to each other at the same time. When not inhibited, forwarding occurs at the same time each hour for a given BBS. You do not have to do anything special to use forwarding, as the SysOp is responsible for getting the forwarding files set up.

All you do is send the message or bulletin. Mail sent to a user served by another BBS will automatically be forwarded, if that user is in the forwarding file, or you assign an @ BBS. Please note, it is recommended that you assign the @ BBS where and whenever possible. Typically, all BBSs in a given area will have entries in their forwarding files for all other BBSs in that area, perhaps the entire country, or even the world. So if you know that VK6ADF reads his mail on VK6AGC, all you need to do when you send your message to VK6ADF, is enter **SP VK6ADF @ VK6AGC**. Your local BBS will then forward it on to VK6AGC where VK6ADF will see and read it.

However, HF forwarding is a little different. If you would like to send a message Via HF from Sydney say, to a station in Hawaii, you would need to do the following:

1. Address mail to the packet station that will receive it in the TO column.
2. In the forward or @ address column, put the BBS, if known, used by the station to whom you are sending the message. Should you not know this address, use that of your nearest known HF BBS.
3. In the subject column, please put the following City, State etc etc, or any other information that will help the SysOp get your mail to the right location for you.
4. Finally, when you sign your message, please tell the other station your "Home" BBS to which he should reply.
5. Do not forget, if you have any HF Forwarding questions, please leave a message for your nearest HF BBS SysOp.

Not every BBS is set up to forward to every packet user. Only if you tell him, will the SysOp know your home BBS. If might be a good idea to send a message to your home BBS SysOp, and ask him to inform other BBSs of your home status. That way, if someone posts a message to you on a BBS across town, or the country, and does not specify your home BBS when sending the message, the BBS will have a record in its forwarding file of your callsign, and what your home BBS is. That BBS will automatically forward the message to you at your home BBS.

There are, at the time of writing, certain "ALL" destinations that are used to send mail to all users at several BBSs. For example, **SB ALL @ VKNET $** will distribute a bulletin to all VK BBSs. What "ALL" designations are available, and where the so addressed bulletins will be, is determined by the SysOps of various BBSs. You might leave a message for the SysOp on your home BBS, asking for a copy of his forwarding file. This should tell you everything you need to know about what goes where.

Please note: That there are changes to take place with the @ address fields for the improved software and forwarding practices of recent times. These changes will be detailed not only on your local BBS, but also within this column. Remember, if in doubt, ask your local SysOp.

Good Operating Ideas From a SysOp's Viewpoint

The following ideas come from many hours watching a SysOp's screen, and seeing difficulties that users have had.

Do NOT send commands more than once. New Users to the BBS will occasionally send a command, wait for a response, and seeing nothing will become impatient and send again. This is unnecessary, because in packet radio, either the packet will get through to the other station, or you will "retry out". If you are still connected, the packet will get through. If you send the command twice, the BBS will respond twice.

Repeatedly executing the information, or help functions, is unnecessary. The H or ? (HELP) command prints a summary list of commands. The I (INFORMATION) command gives information on a particular BBS installation. They are not context sensitive, and their responses will not vary - depending on what you are doing on the BBS. The information is always the same. Therefore, there is no need to print it more than once, but remember to print it once.

If possible, stack multiple commands using the pass character (usually CNTR-V). With TAPR TNC or clone, each time you hit return, you send a packet. You have to end a command to a BBS with a return, so you have to send it. You can save air time, though by "stacking" commands in the same packet, by preceding the return with a PASS character. This will put the commands in the same packet. Of course, do not use the PASS character before the last return, or you will never send that packet at all.

Do NOT list all messages. The message file gets pretty long pretty fast, and listing the whole file takes a long time. Also, please be courteous during peak usage hours - limit your access time so others may pick up their mail.

Table 2 - Command Summary for MBL 5.12

A	ABORT a listing or file
B	BYE, logs off a BBS and disconnects your call
D	DOWNLOAD a file FROM a BBS
H	HELP information file
I	INFORMATION about this BBS
J	List of calls heard by this BBS
JK	Connected
JA	heard on TNC-A, JB TNC-B, JC TNC-C etc etc
K	KILL a message
K x	a specific message
KM	mine that I have read
L	LISTS messages in the mail box
L	New messages since last using the L command
LM	Only messages to you (List Mine)
LN	Only unread messages to you (List New)
LL 10	List last 10 messages
L< callsign	Messages from a 'callsign'
L> callsign	Messages sent to a 'callsign'
L@ callsign	Messages sent care of a 'callsign'
L x	Messages above a given number 'x'
L x y	Group of messages from 'x' to 'y'
N	NAME - N (your first name)
R	READ messages (not 'files') without forwarding headers
R x	Message number 'x' - up to 6 messages numbers
RM	Messages addressed to you
RN	New messages addressed to you
S	SEND messages (not 'files')
SP callsign	Send private message to a 'callsign'
SP callsign @ BBS callsign	Send message to a station at another callsign
SB ALL @ VKNET $	Send a general Bulletin addressed to ALL at VKNET
SP SYSOP @ ASIA $	Send private Bulletin addressed to SysOps at Asia
SB TCPIP @ LAN $	Send General TCPIP bulletin to all at the LAN
T	Talk to your SysOp - Pages the BBS SysOp
U	UPLOAD a file TO the BBS
V	VERBOSE READ messages including forwarding headers
V x	Messages number 'x' - up to 6 messages
VM	Messages addressed to you
VN	New messages addressed to you
W	WHAT's available (File section)
X	EXPERT Status - EXTENDED prompt line
Y	YAPP Binary File Transfer
Y or ?Y or YH	YAPP help file
YW	Binary file directory (What)
YN	Binary new files (What new)
YU	Yapp upload
YD	Yapp download

ar

TELL THE ADVERTISER YOU SAW IT IN AMATEUR RADIO

CONTESTS

Calender, Venezuela Jack Files

Federal Contests Manager, Frank Beech
VK7BC
37 Nobelius Drive, Legana 7277

June:

17-18th WIA Australian Novice Contest. (Rules in May amateur radio).

July:

1-2nd Venezuelan Independence Day Contest PHONE SECTION (Rules this issue)

1st Adelaide Hills ARS Australasian sprint CW SECTION (rules May AR).

8th Adelaide Hills ARS Australasian sprint PHONE SECTION (Rules May AR).

29th - 30th Venezuelan Independence Day contest CW SECTION (Rules this issue).

August:

12th - 13th WIA 1989 Remembrance Day Contest (Rules July AR)

Following an enquiry from a participant in the 1988 Remembrance Day contest, I checked the results published in Amateur Radio. It then became apparent that in the process of typesetting the following results were not printed.

VK2 division VHF phone results had been listed as HF phone.

VK2ALZ	124 omitted from VK2 HF phone list.
VK3XBA	100 omitted from VK3 VHF phone list.
VK3XB	194 omitted from VK3 HF CW list.
VK4AT	60 omitted from VK4 HF open list.
VK4OL	200 omitted from VK4 HF phone list.
VK4APG	90 omitted from VK4 VHF phone list.
VK5TY	85 omitted from VK5 HF phone list.
VK5SE	120 omitted from VK5 VHF phone list.
VK5TY	90 omitted from VK5 VHF phone list.
VK6WC	43 omitted from VK6 VHF phone list.
VK7ZJH	53 omitted from VK7 VHF phone list.

The Adelaide Hills ARS Australasian sprints are becoming ever more popular as the years pass by, and, when you see the photographs of the trophies, and realise their high and enduring quality they will attract much more activity. These wall plaques are engraved polished brass plate, black lacquer filled on a polished natural wood backing 10 x 8 inches, (250 x 200 mm).

As the contest title suggests, these are sprints, and as such can attract more entrants so leave the dishes in the sink and see if you can win one of these very FB trophies.

Next month should see the Contest Championship results announced, and the rules for the 1989 Remembrance Day contest will be published. As is the rule at this time of year, we publish the WIA disqualification criteria. I made a submission to the 1989 Federal Convention that these rules be amended to remove the clause that prohibited an amateur who had been disqualified from entering the same contest the following year. The convention was held only two weeks ago, so it will be some time before I receive any feedback and can then inform you of any changes to the rule.

Please read the rules for the Venezuelan contest, and note the awards section. You will see an added inducement to send in a log. Good luck in the contest.

Venezuelan Independence Day Contest

Phone Starts: 0000 UTC 01-JUL-89
Ends: 2400 UTC 02-JUL-89

C.W. Starts: 0000 UTC 29-JUL-89
Ends: 2400 UTC 30-JUL-89

This is the contest celebrating Venezuela's Independence. It's a world wide type contest; therefore, do not confine your activity to working YV's only. Use all bands, except 160m; 10 through 80 meters (10m, 15m, 20m, 40m and 80m).

There are four (4) classes: single operator, single and all bands, and multioperator single and multi-transmitter (no limit to transmitters, but only one signal per band permitted).

Exchange: RS(T) report plus QSO number starting at 001.

Points: Contacts between stations in the same country one (1) point, contacts between stations on the same continent but different countries, three (3) points and contacts between stations on different continents are worth five (5) points.

Multipliers: One (1) for each YV call area contacted on each band, and one (1) for each different country contacted on each band (included own).

Final Score: Total QSO points from all bands, multiplied by the sum of the multipliers from each band.

Awards: A plaque to the highest scorer in each class and certificates to stations making more than ten per cent (10%) of the score reached by winner in the same class.

To be eligible to win the plaque a minimum of two hundred and fifth (250) QSO's must be made for SINGLE OPERATOR-SINGLE BAND and five hundred (500) for all other classes.

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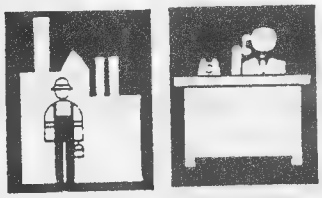

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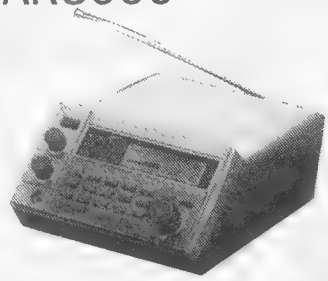

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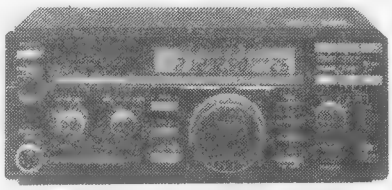

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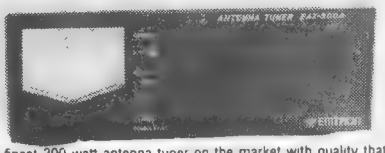

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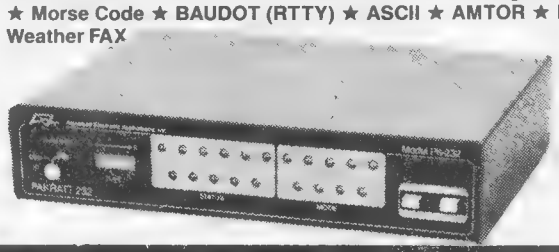

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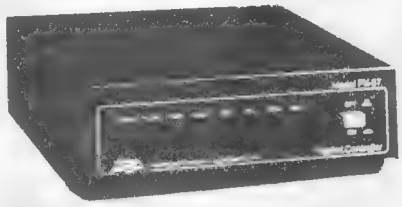

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Log Instrcn: All times must be in UTC.

Use a separate LOG sheet for each band, and a summary sheet showing your callsign, name and address as well as the scoring and the usual signed declaration stating that all CONTEST RULES and regulations for amateur radio in the country of the contestant have been observed. Each YV call area (9) and each country (DXCC country list) should be entered only the first time they are contacted in each band.

Stations considering themselves as possible winners of plaque or certificate should include two (2) IRC's or its equivalent in US dollars.

Mailing deadline is September 30th for SSB entries and October 30th for CW and they go to:

Radio Club Venezolano
Concurso Independencia De Venezuela
PO Box 2285-Caracas 1010-A
Venezuela

Contest Disqualification Criteria

A standardised approach is taken to the disqualification of logs entered in all of the contests which come under the direct control of the Federal Contest Manager appointed by the Federal Executive.

It is suggested that you take note of this particular issue of the magazine for reference to these general rules in the case of all contests for the ensuing year.

Details are as follows:

Disqualification: An entry in WIA conducted contests may be disqualified if, upon checking the logs, it is necessary that the overall score be reduced by more than two per cent. Score reduction does not include correction of arithmetic errors. Reductions may be made of unconfirmed QSOs or multipliers, duplicate QSOs or other scoring discrepancies.

An entry will be disqualified if more than two percent duplicate QSOs are detected as being claimed for credit.

For each duplicate or mis-copied call sign removed from the log by the contest manager, a penalty of the deletion of three additional QSOs of equivalent value to the offending claim may be applied.

The penalty will not be considered as part of the two percent disqualification criterion.

If a participant is disqualified under these aforementioned provisions that operator will be barred from entering the contest for that particular mode in the ensuing year; eg Disqualification from the 1989 RD Contest, phone section will prohibit an entry for the 1990 RD contest, phone section. However, participation in the 1990 RD contest's CW section would be allowed.

Logs which are very untidy, illegible or incorrect in layout to a major degree may also be disqualified. The callsigns of disqualified participants may be listed in AMATEUR RADIO magazine, together with the contest results.

The Sunshine State Jack Files Memorial Contest

1989

All licenced amateur radio operators are invited to participate in the Sunshine State Jack Files Memorial Contest for 1989.

Objects

1. The objects of the Contest are to:

a. perpetuate the memory of the late Jack Files, who was a long time member of the Council of the Queensland Division of the Wireless Institute of Australia;

b. enable amateur radio operators to work Queensland stations for the "Worked All Queensland" Award, and other Awards issued by Amateur Radio Clubs in Queensland;

c. encourage mobile/portable operation from the lesser populated towns and shires of Queensland;

d. provide a 'warm up run' for the Remembrance Day Contest.

Period

2. The Contest will be run in two time periods;

a. 1st period, Saturday, 15th July, 1989, from 0730 hrs UTC to 1230 hrs UTC;

b. 2nd period, Saturday/Sunday, 15/16th July, 1989, from 2330 hrs UTC to 0030 hrs UTC.

Sections

3. Stations within VK4:

a. Tx all bands. 20% of contacts claimed must have been made on the V/UHF bands;

b. Tx HF phone;

c. Tx HF CW;

d. Tx V/UHF only;

e. Club stations in a. to d. above, single transmitter.

4. Stations outside VK4:

a. Tx all band phone;

b. Tx all band CW.

Preferred Contest Frequencies

Phone	CW
1.820 - 1.840 MHz	1.805 - 1.815 MHz
3.570 - 3.590 MHz	3.525 - 3.535 MHz
7.100 - 7.120 MHz	7.010 - 7.020 MHz
14.180 - 14.200 MHz	14.050 - 14.060 MHz
21.170 - 21.195 MHz	21.125 - 21.150 MHz
28.480 - 28.520 MHz	28.125 - 28.150 MHz

Operation

5. The WARC Bands may not be used in this Contest. Cross band operation is permitted only via a satellite repeater, contacts made via a net are not admissable, cross mode operation is allowed.

6. The Contest is primarily for single operator stations, but log keepers are allowed. Where two licencees use a single station, each is to submit a separate log.

7. Club Stations may use multiple operators, provided that there is only one transmitter in use at any one time.

8. Home based stations may be worked again after an elapsed time of one (1) hour.

9. Mobile or portable stations are not subject to the one hour rule when operating from a different City/Town/Shire. When operating within one hour from that of previous operations, they are regarded as "new" stations for their own and the contacted stations scoring purposes. (Different is not to be taken as alternating, eg., operations from Area A for 50 minutes, then move Area B, operate for 50 minutes and return to Area A, would be regarded as alternating, not different). Operations from the same City/Town/Shire after one hour, regardless of movement within that area, are regarded as home station operations.

Calling Procedure

10. Phone; CQ Jack Files Contest.

CW; CQ Test Jack Files

Exchanges

11. Each exchange is to contain the following elements;

a. the location designator, N or S, see SCORING;

b. the serial number beginning with 001 and continuing in sequence throughout the Contest and on all bands worked;

c. the "Code Letters" of the designated City/Town/Shire, as set out in the attached "Designated Areas and Code Letters".

Scoring

12. For scoring purposes Queensland is divided into two zones by the Tropic of Capricorn. Stations in designated areas North of the Tropic are to use the letter "N" as the first element of contact exchange. Those in designated areas South of the Tropic are to use "S" similarly.

Example. A valid exchange for scoring purposes might be;

S	001	MH
Zone	Contact	City/Town/Shire
N	132	RH

13. Stations within VK4, phone contacts;

a. HF/V/U/HF within the same zone 3 points

b. HF/V/U/HF with the opposite zone 5 points

c. HF/V/U/HF outside VK4 2 points

d. ALL CW contacts score double points, i.e. 6, 10, or 4.

14. Stations outside VK4, ALL phone contacts, 2 points, ALL CW contacts, 4 points.

Bonus Points Applicable To All Stations

15. A bonus of ten (10) points may be claimed for the first contact with a City/Town/Shire, other than the one from which the claimant is operating, over the whole Contest.

16. A further bonus of ten (10) points may be claimed for each Club station on each occasion it is worked (one hour rule still applies).

Examples:Phone. A VK4 station in S zone, first contact with VK4000 in Cairns, which is the Club Station of the Green Island ARC Inc., ... score 5 points for across zone, 10 points for first contact Cairns City, 10 points for Club Station, total 25 points.

CW. For the same contact, score 10, 10, 10, total 30 points.

Stations outside VK4 would score 2, 10, 10, or 4, 10, 10 for phone or CW respectively.

NB. No further bonus may be claimed for Cairns City.

Logs

17. Logs must show the full name, address and call sign of the operator(s), the Section entered, points claimed for each contact and the total points claimed, a signed and dated statement that the Rules have been followed, and the appropriate licence conditions observed. A recommended form of log is:

DATE TIME	BAND	MODE	CALL	No. SENT	No. REC'D	QSO	POINTS C/T/S	CLUB	TOTAL
15									
7									
89									
0834	7.0MHz	Phone	VK4000	S001BE	NOO2CS	5	10	10	25
0837	7.0MHz	Phone	VK4SSS	S002BE	S001BE	3			3

(Assumes VK4SSS is not a Club station)

18. Logs are to arrive at:
VK4 Contest Manager
T. Mulholland, VK4AEM
PO Box 35, Caloundra City 4551
ON or BEFORE the 11th August, 1989.

Awards

19. Trophies will be awarded by the WIA (Q) Awards Manager to the highest scorer in each section, provided that there is a minimum of five entries in that Section.

Code to Define Cities, Town and Shires For the Jack Files Contest

Cities/Towns

Brisbane	BN	Goondiwindi	GI	Redcliff	RC
Bundaberg	BU	Gympie	GY	Rockhampton	RH
Cairns	CS	Hervey Bay	HB	Roma	RM
Caloundra	CA	Ipswich	IP	Toowoomba	TO
Charters Towers	CT	Logan City	LC	Townsville	TV
Dalby	DY	Mackay	MC	Thuringowa	TH
Gladstone	GD	Maryborough	MB	Warwick	WA
Gold Coast	GC	Mount Isa	MI		

Shires

Albert	AL	Douglas	DG	Mornington*	MZ
Allora	AA	Duaringa	DU	Mount Morgan	MM
Aramac	AC	Eacham	EA	Mulgrave	MG
Arakun*	AN	Eidsvold	ED	Mundubbera	MU
Atherton	AT	Emerald	EM	Murgon	MY
Burdekin	BK	Esk	EK	Murella	MX
Balonne	BL	Etheridge	ET	Murweh	MH
Banana	BA	Fitzroy	FZ	Nanango	NN
Barcaldine	BC	Flinders	FL	Nebo	NE
Barcoo	BO	Gatton	GT	Noosa	NO
Bauhinnia	BH	Gayndah	GH	Paroo	PO
Beaudesert	BT	Glengallan	GL	Peak Downs	PD
Belyando	BY	Gooboorum	GM	Perry	PY
Bendemere	BD	Herberton	HT	Pine Rivers	PR
Biggenden	BG	Hinchinbrook	HK	Pioneer	PI
Blackall	BX	Ilfracombe	IL	Pittsworth	PT
Boonah	BV	Inglewood	IW	Proserpine	PP
Booringah	BQ	Isis	IS	Quilpie	QL
Boulia	BZ	Isisford	IF	Redland	RD
Bowen	BW	Jericho	JE	Richmond	RI
Broadsound	BS	Johnstone	JO	Rosalie	RO
Bulloo	BP	Jondaryan	JY	Rosenthal	RL
Bungil	BI	Kilcoy	KY	Sarina	SA
Burke	BR	Kilkivan	KK	Stanthorpe	ST
Caboolture	CB	Kingaroy	KG	Tambo	TB
Calliope	CL	Kolan	KO	Tara	TA
Cambooya	CM	Laidley	LA	Taroom	TM
Cardwell	CD	Livingston	LV	Tiaro	TI
Carpentaria	CP	Longreach	LO	Torres	TE
Chinchilla	CH	McKinlay	MK	Waggamba	WG
Clifton	CF	Mareeba	MA	Wambo	WO
Cloncurry	CY	Maroochy	MO	Warroo	WR
Cook	CK	Milmeran	ML	Widgee	WE
Crows Nest	CN	Mirani	MN	Winton	WI
Croydon	CR	Miriam Vale	MV	Wondai	WD
Dalrymple	DL	Monto	MT	Woocoo	WC
Diamantina	DI	Moreton	MR	Woongarra	WN

*Permission to operate in these shires is required.

AR SHOWCASE

Fully Submersible Connectors

The Buccaneer range of 3 pin 250VAC/10AMP environmental connectors have now been approved by the State Electricity Commission of Victoria for operation under IP68 conditions.

The approval enables these connectors to be safely operated at 10M (33ft) depth, equivalent to 100 Kpa (15psi) for 16 hours at rated voltage and current.

This makes Buccaneer the ideal choice for applications involving dangerous voltages where complete protection from the environment is paramount.

Buccaneer is also available in 2 to 9 pin and BNC versions to the same EP68 specification.

Further information is available from:
Ericsson Components Pty. Ltd.
PO Box 35
Preston 3072
Tel: (03) 480 1211
Fax: (03) 484 3645

CSIRO Antenna for Aussat

The CSIRO has won a $250,000 contract to design an antenna for the next generation of Aussat satellites.

Through its Radiophysics Division, the CSIRO will build a prototype antenna for the Hughes Aircraft Co.

Antennas based on the prototype will be fitted to Aussat satellites launched in 1992 to produce footprints covering Western Australia, the North-West Shelf, Christmas Island and the Cocos-Keeling Islands.

ar

QSLs From the WIA Collection

Former French Colonies

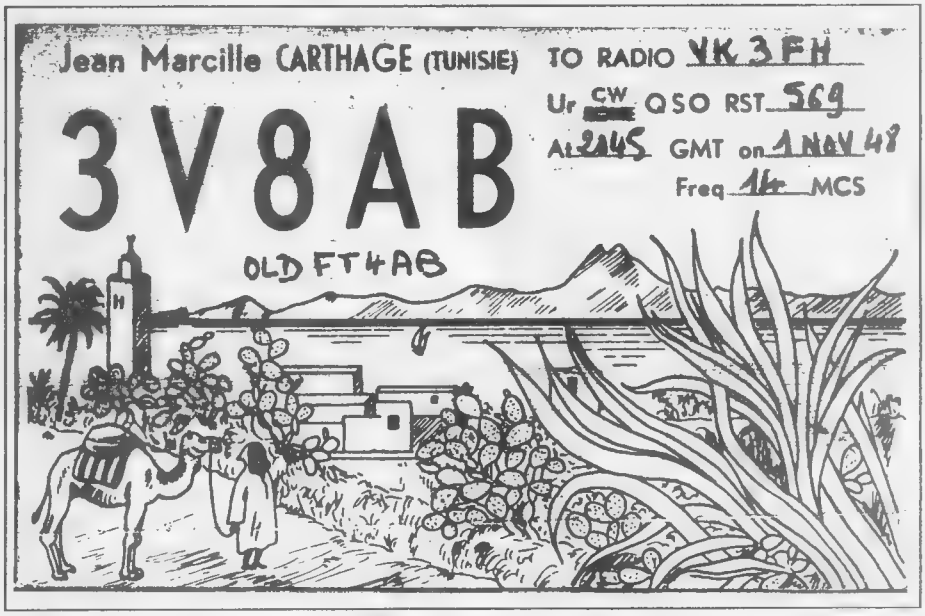
Ken Matchett VK3TL,
PO Box 1,
Seville 3139

3V8ONU

This QSL from Tunisia portrays a map of this North African country. It is really a peninsula jutting out into the Mediterranean Sea. Flanked by Algeria to the west and Libya to the east, it lies almost opposite Italy. A Moslem country, it was forwarded in the fight for women's rights having prohibited polygamy in the mid 1950's. Formerly occupied by the French, the country fought bitterly for its independence which finally was declared on the 20th March 1956. This QSL dated September 1979 was for a DXpedition organized in part by West German radio operators. This accounts for the word Tunesien written on the map. The suffix letters of the especially allocated call-sign (ONU) stand for the French initials of the United Nations Organization, the aim of the DXpedition being to raise funds for U.N.I.C.E.F., the United Nations' organization established to help the disadvantaged children of the world. The Arabic word at the top of the QSL is the word for Tunisia, Arabic being Tunisia's official language although French is widely spoken particularly in the business world. At the very top of the map is marked the naval port of Bizerte, scene of the last struggle against the French (despite the country having already gained its independence). Interestingly enough, the country itself was the scene of the last battle in the North African campaign before the expulsion of the Axis forces.

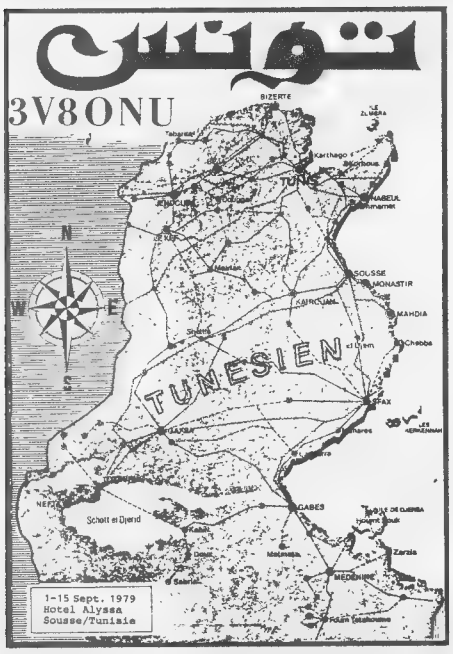
FT4AF

Under the Washington Convention of 1927, the prefix F was allocated to France and its possessions (including colonies and protectorates). The first lists of countries that could be contacted by amateur radio showed only the F prefix but in early 1930 the prefix FM was allocated to Tunisia. In the ARRL Amateur Handbook of 1936 we find a prefix change from FM to FT, the FM prefix being taken by Martinique (another French possession). The FT prefix appeared in the first of the post-war DXCC country lists, being replaced by 3V8 in 1948 (the 1947 International Telecommunications Conference in Atlantic City had allocated the prefix block of 3Va - 3VZ to Tunisia). Although numeral prefixes have become quite common today, they were still rare in the early 1950's. In fact, Tunisia 3V and Israel 4X, were at one time the only numerical prefixes used. The QSL dated October 1935, originated from the coastal city of Sfax lying to the east. On the front of the card is shown an olive plantation with workers picking the fruit, bagging it and loading it on to camels. Olive cultivation is very high in the country's economy. The radio operator was Madamoiselle Andree Costa, who must have been (at that time) one of the very few YL operators in the region.



3V8AB

This QSL dated November 1948 was one of the first QSLs from Tunisia using the new 3V8 prefix. The QTH of the station is shown as Carthage an ancient city founded by the Phoenicians and lying about 20 kms from the modern capital, Tunis. Over two thousand years ago, the Carthaginians comprised one of the most powerful trading nations on earth, having conquered most of the Mediterranean nations before Carthage finally fell to the Romans in 146 B.C. Note that Jean Marcille has indicated his old call-sign of FT4AB. The drawing depicts a



typical North African coastal scene with its desert plants, flat white buildings and the ubiquitous "ship of the desert".

If you would like to play a part in building up the WIA QSL collection and to save something for the future, would you please send a half-dozen (more if you can spare them) QSLs which you feel would really help the collection along.

All cards are appreciated but we especially need commemorative QSL's, special event stations QSLs, especially assigned call QSLs (eg. VK4RAN), pre-war QSLs, unusual prefixes, rare DX and pictorial QSLs of not so common countries. Could you help? Send to PO Box 1, Seville, 3139 or phone (059) 643 721 for card pick-up or consignment arrangements for larger quantities of cards. ar

	1	2	3	4	5	6	7	8	9	10
1	—	·	—	·	—	—	—	—	—	·
2	·	—	·	·	·	·	·	—	—	·
3	·	—	·	—	—	—	—	·	·	·
4	·	·	·	·	·	—	—	·	·	·
5	·	·	·	·	·	·	—	·	—	·
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7	·	—	·	—	·	—	—	·	—	—
8	—	·	—	·	·	·	·	·	·	·
9	—	·	·	·	—	—	—	—	·	·
10	·	—	·	—	·	·	—	·	·	·

Solution to Morseword No. 27

Across: 1 come 2 lip 3 rode 4 hats 5 hear 6 write 7 arty 8 chi 9 bone 10 alb

Down: 1 beep 2 pax 3 bend 4 fix 5 Cain 6 year 7 norm 8 give 9 mums 10 hits

DIVISIONAL NOTES

WA Division

Council has welcomed 92 new members during the year keeping membership static at approximately 760. (Unfortunately we do not get monthly figures from the federal office).

Meetings continued at the Westrail Lecture Theatrette, not without a few problems; lifts and tea etc.

In May VK6UU gave us a talk on repeaters. June saw the presentation of the amateur of the year award to VK6IW, and also the twenty metre packet debate with VK6LZ, ZLD, AGC and ART all speaking on the subject. This continued into the July meeting with the vote on preferred frequencies. In September VK6AN spoke about JOTA and during October Harry VK6WZ played the tape of a commercial broadcast about the travellers net. In November Cy VK6IK had us learning about linear amplifiers, December saw us entertaining senior staff from DOTC at our Christmas party with the manager winning the door prize and Lee VK6HC winning the raffle. The meritorius service awards were presented to VK6ATA and VK6ZRY. In January we asked Will VK6UU back to show us the new generation repeaters with the almost completed Mt. Saddleback repeater which is a near copy of the new one at Mt. William. In March we were ably entertained by Professor George Hatton with a lecture on water diving and its relationship to bird migration.

During June and August we held two very successful morse workshops and October saw the Institute participate in the Northern Corridor's Hamfest whilst in September we had the letter competition.

1988 was Australia's Bicentennial year, we celebrated with a special call sign VI88WA which was used by various amateurs around the state, especially during JOTA when we enjoyed the Aussat Link to Sydney and Melbourne.

On May 31st Council entertained the Federal President at a working dinner. This was followed at midnight by an on air welcome to the novices who gained 2 metre privileges from June 1st.

During October the saga of the Wanneroo Mast case came to an abrupt end when in sheer desperation and frustration Peter moved to the bush. However Council is continuing to monitor local authority attitudes to masts in general.

Thanks to Peter VK6BWI for suggesting the crystal bank and to Bruce VK600 for looking after it.

Silent keys: The LY luncheon group began the year by saying farewell to their founder Daphne Hugo, widow of Ron VK6KW. The ladies also noted the passing in October of Mrs. Bobbie Hill VK6MH. Also marked by the Institute in a minute of silence was the passing of the following: Charlie Savory VK6ACS, Harry Pride VK6HP, Reg Davies VK6BQ, Bill Hornridge VK6KBP, Ron Stitfold VK6RS, John Denny VK6NT and John Klinge VK6AKL.

In conclusion I wish to thank all councillors and all the many volunteers who freely gave so much of their leisure time to further the cause of amateur radio and its many facets in Western Australia.

Christine Bastin VK6ZLZ
President VK6 Division.

VK6 Bulletin

The South West Amateur Radio Group

About 180 km south of Perth is the peaceful city of Bunbury. Situated on the coast around Koombana Bay, Bunbury still manages to combine the feel of a coastal resort town with a high-tech future racing forward at the speed of 6ZRY's Sigma!

In Bunbury and surrounding districts, there are around 60 amateurs enjoying this lifestyle, of which 15 members of the SWARG. The club was founded a long time ago but was inactive for many years until the noisy arrival in Bunbury of Barry VK6AVO back in 1985 stirred the gourds a bit, and rekindled interest in the Group.

Meetings are held on the first Tuesday of every month at the First Carey Park Scout Hall, starting at 2000 hrs local time.

The group has a shack, nestled in one corner of Scout Hall. Equipment installed includes a TS130 SE HF transceiver feeding a TH3jr. on top of a 50 feet homebrew tower. The TH3 has been modified slightly to improve performance.

The rotation system is currently of the Armstrong variety, but the Group will be investing in a heavy duty commercial unit in the near future.

The Group sports its own repeater, VK6RBY operating on Ch1 (146.650, -ve) which was bought by the club and built by Bob 6ZRT. The repeater resides in the shack, and operates through a 6dB collinear antenna mounted above the TH3.

There are plans afoot to move the repeater to a far better site - I will provide details when they are available.

A large 2 metre STC base rig has been built up, and will be installed in the shack shortly. It currently has 3 channels and 50W RF output. Installation of a good antenna will ensure excellent coverage around the south west corner of our great state.

The club has an extensive library of publications including AR, CQ, 73 and ARA some of which go back for many years. These may be borrowed by members of the group at no charge. Also, a very extensive junk box is maintained by the club, including some old VHF/UHF rigs which may be fodder for future repeaters!

Office bearers for 1989 are as follows -

President & Technical Officer	VK6ZRT Bob
Vice President	VK6VS Terry
Secretary/Treasurer	VK6ZB Colin
Librarian	VK6ZKK Kevin
Publicity Officer	VK6AVO Barry

By the way, the Group holds an on-air meeting on the third Tuesday of every month on 3.605 MHz at 2000 hrs local time, with liaison on

the Ch1 club repeater.

Plans for the future include building an ATV, and an HF linear amplifier. This latter project is being managed by Vic VK6BK who now has all the components together for a dual 813 unit.

Can we expect slow morse transmissions from Bunbury?

Finally, don't forget the re-transmission of the VK6 Divisional broadcast every Sunday morning.

The SWARG are back in business again. Why don't you become a shareholder?

John VK6JX
83 Anemone Way
Mullaloo 6025

The Southern Electronics Group

The very southern end of the great state of Western Australia is populated by approximately 58 licenced radio amateurs of which 20 are members of the Southern Electronics Group. They are a very active group with activities and interest encompassing many facets of our impressive hobby.

The SEG, based in Albany, meets on the second Thursday of most months in the meeting hall behind the Uniting Church in Duke Street, Albany at 1930 hrs local. Every 3rd month, there is no Thursday night meeting - instead the group hosts a social outing for members and wives on the Saturday evening at Wilner House, Middleton Beach. This has turned out to be a very popular event with 18-20 people attending. Start time is 1900 hrs local and the food is superb!

SEG personnel get involved every Sunday at 0930 hrs local with rebroadcasting the WIA VK6 Division News broadcast via the Mt Barker repeater on 146.825 MHz (-ve offset).

This repeater, as well as one on 146.725 MHz (-ve offset) in the town of Albany itself, are owned and operated by the Group.

The group also operates and maintains 3 beacons -

- 10m VK6RTW 28.266MHz
- 6m VK6RTW 52.465MHz
- 2m VK6RTW 144.465MHz

The SEG was instrumental in the adoption of a Federal policy whereby all VHF and higher frequency Beacons in any given city or town must have the same 3 digits on the right of the decimal place in the frequency allocation for those beacons.

The group encourages Packet Radio, and there are currently 12 members with the capability of running this latest mode. A packet radio bulletin board service is operated by Aub VK6XY on 7.025MHz and 147.575MHz. The 2 metre frequency will be changed to 144.850MHz when new crystals arrive. The 40 metre BBS takes over from 1700 - 2200 local.

The office bearers for the Group are currently

President	- VK6TR Tom
Secretary	- VK6PHL Bevan
Treasurer	- VK6NQ Merv
Albany Repeater Officer	- VK6XY Aub
Mt Barker Repeater Officer	- VK6ZP Mike
Beacon Officer	- VK6XW Carl
Publicity Officer	- VK6BE Bob

Future plans for the group include -

1. Provision of a packet radio digipeater link with Perth. The SEG is providing the equipment to be installed at the Mt. Barker TV Transmitter site, and Aub VK6XY will be doing the installation work. This system will then remove the necessity for the 40 metre bulletin board!

2. Later this year, the SEG in collaboration with the Perth Repeater and RTTH Groups will be promoting packet operation in the town of Esperance - using 2 metre and 40 metre bulletin boards. One day the whole of WA may be linked by repeaters/digipeaters.

3. Provision of a 70cm beacon. However, the only holdup is shortage of equipment. So if you have any gear which could be pressed into service, please let the Group know!

With active, forward-thinking clubs like the Southern Electronics Group promoting Amateur Radio, our hobby can only go from strength to strength.

See you all next month if not on the bands. 73's

John VK6JX

QRM from VK7

The following Office Bearers for this Division were elected at our AGM on 18 March for the coming year.

PRESIDENT	Mike Wilson, VK7ZWW 23 Mc Cann Crescent, Lenah Valley, 7008
SECRETARY	Bob Richards, VK7NRR PO Box 1010, Launceston 7250
TREASURER	Peter King, VK7ZPK 97 Brent Street, Glenorchy 7010
MEMBERSHIP	Bob Richards
BROADCASTS	John Rogers, VK7JK 1 Darville Court, Blackmans Bay, 7051
FTAC	Anthony Tulk, VK7ZTA 20 Athleen Avenue, Lenah Valley, 7008
INTRUDER WATCH	David Spicer 5A Helen Street, Ulverstone, 7315
QSL BUREAU	Chas Harrison, VK7CH PO Box 3, Hobart, 7001

The Federal Councillor and Alternate Councillor remain unchanged.

VK2 Notes

By the time you read these notes the Annual General Meeting and elections will be over, and the Division is settling down for another year. During May there was considerable discussion and forums on the proposed fee increase. The VK2 delegation to the recent Federal Convention felt that insufficient notice had been given to the Membership and refrained from voting until the matter had been referred back to the Membership. They also refrained from voting on the suggested introduction of a no-code Novice grade license until the membership had been advised. You should listen to the Divisional broadcasts for progress in these matters.

A reminder that the annual fireworks night will be held at VK2WI Dural on Saturday evening the 3rd June. (63 Quarry Road). The Oxley Region ARC hold their annual field day over the weekend 10/11 June at Port Macquarie. Details from the club at PO Box 712, Port Macquarie 2444.

A meeting to plan this years JOTA operation was held at Amateur Radio House on May the 5th last. The next meeting is set down for the 4th August. It is suggested that if you will be taking part with a group this year, that you notify the JOTA committee via the Divisional office so that the prepared information may reach you in time.

WICEN renewals were sent out mid-April together with some information on possible changes to WICEN operation upon the release of the "Grey Review" into NSW Emergency Services. A report is being sent to those WICEN members who have renewed.

Additional personnel are required for the Sunday Broadcasts, in particular, full calls for the evening. Over the past few months several people have moved to the country. The next roster period is July to September so if you can assist please contact the Divisional office. The hard disc on the VK2RWI packet board Ch 4850 had a head crash and was out of service for a while. The slow morse service from VK2RCW also suffered a computer failure and was not available for a few weeks. It is only when a facility is not available that the operators find out how many are using the system.

ITU Day, May 17.

The Division will be operating the special event station on this day, VI2ITU. For some time there have not been any great circle bearing maps based on Sydney available. The VK2 Division is working with a map company to produce one. More details when production is completed. With increasing interest in the Maidenhead Grid, members are advised that the Divisional Bookshop has an Australian version of the Maidenhead available for $4.00 plus postage.

New Members

A warm welcome is extended to the following who were in the April intake.

NC Craigie	VK2MNC	Croydon Park
MJ Dower	VK2ENG	Forestville
WC Dwyer	VK3DMP	Batemans Bay
JH Evison	Assoc.	Matraville
B Harris	Assoc.	Terrigal
HD Hartman	VK2FPM	Woodbine
DW Heathfield	VK2JDH	Warnervale
P Hodgins	VK2PSD	Orange
IT Howard	VK2XX	Picnic Point
ER Milne	VK2KFX	Blaxland
J Rowe	VK2ZLO	Arncliffe
WJ Tyler	Assoc.	Somersby
RE U'Brien	Assoc.	Ermington
RW Vulhop	Assoc.	Mascot
DR Walmsley	Assoc.	Elermore Vale
GR Wright	Assoc.	Tamworth

VK4 Notes

Jack Files Contest

This year the contest is on 15/16th July.

Many stations will be operated from portable sites.

Among these will be VK4's .. NLV, NEF, MWZ, NHF.

The following shires and cities will be activated on 80m. On 3.605 +- you will find; Boonah, Glengallon, Warwick, Rosenthal, Alora, Clifton, Cambooya, Esk, Toowoomba, Jondaryn, Rosalie, Crows Nest, Gatton, Laidley, Moreton, Ipswich, Logan, Beaudesert, Albert, Redland and Brisbane. Listen for the Special Callsign.

Others you will hear will be: Wondai, Nanango, Murgon, Caboolture and Landsborough.

Good luck to all,
VK4 Division, per VK4MWZ
Bill Horner.

Precise Key Adjustment

Getting the gap and spring tension on a Morse Code key just right used to be a matter of trial and error and personal preference.

But Leicester ZL4LW believes a more scientific approach to the problem is needed. In a letter to The Morseman column, NZARTs Break In magazine, he said: "Set the contact gap to eight thousands of an inch (0.02mm) with an automobile distributor feeder gauge.

"Then adjust the tension by placing the key on a set of kitchen scales. Note the weight, then gently press down until the contacts close. The weight difference (hand force) should be between 750 and 800 gm for correct operation."

Sorry Leicester, but it all sounds a bit too analogue. Is there anyone who has a computer program to carry out the vital task of adjusting a Morse Code key?

The 10 Metre Satellite Downlink

Satellite users have complained that the 10 metre downlink band of 29.300 - 29.510MHz has been increasingly disrupted by stations using FM.

All radio amateurs are reminded that this band segment has been set aside by international agreement for use as a downlink passband for Mode A satellites.

By operating in this segment 10 metre FM stations wipe out a considerable portion of the downlink spectrum and make it useless for using of the RS10 and RS11 satellites.

If you are one of the many now enjoying FM operation on 10 metres and working plenty of DX, please consider others and avoid using the satellite band.

TELL THE ADVERTISER YOU SAW IT IN AMATEUR RADIO

POUNDING BRASS

Telegraphic History

by Gilbert Griffith VK3CQ,
7 Church Street, Bright 3741

My 11 year old son spent two weeks in Canberra last year as a part of the local school's exchange program. He spent most of the time there visiting places of interest and upon returning home, described a few of them - such as the war memorial. Like most kids, he must have failed to mention a lot of other places I would have been interested in, and when he saw me reading through a pile of info sent to me by John VK1AK, he gave me the full story. It is the National Science and Technology Centre. To quote from John's letter: We have some tentative plans to establish an amateur station in the Centre to encourage interest in communications technology".

"The Centre is an interactive or hands-on operation where visitors are encouraged to operate many exhibits we have on display. These range from high-tech robotic dinosaurs, to an earthquake simulator, where visitors can experience a Force 6 tremor, and on to much simpler exhibits demonstrating the physics of light, sound, gravitation and so on. In all we have about 150 exhibits."

"One of our latest activities is the installation of a telegraphic link to the old telegraph station at Alice Springs which has been restored as a Bicentenary Project. The telegraphic terminal in the Centre, and the link to Alice Springs, have been sponsored by Telecom. The operators are members of the Morse Codian Fraternity...."

"As part of the exhibit, again sponsored by Telecom, we have a simple Morse Code circuit which will enable visitors to send messages to each other (using straight keys!)..."

I recently took the family to Albury to visit the Questacon Science Display (travelling), in the hope of seeing the singularity simulator (black hole gravitic field simulator) which fascinates me. Evidently you can roll steel balls into the simulator and watch them go into orbit(s) around the black hole. Wow!

Some of the info includes the following details about the Overland Telegraph. The construction of the Overland Telegraph Line was one of the greatest civil engineering feats in the history of Australia. It connected the Australian colonies with Britain and the rest of the world by telegraph lines.

Charles Todd, the South Australian Superintendent of Telegraphs, had arrived in Australia in 1855 with ambitious plans to connect Adelaide with Melbourne and Sydney, followed by a link with England. The link depended on subsidies by the British and colonial governments, and involved complex negotiations.

Influenced by Todd, the South Australian Government decided to build a line from Port Augusta to Darwin independently of the other colonies, and work began in September 1870.

The harsh conditions of the arid centre and the tropical north, and the difficulties that the construction teams encountered, made the construction of the Overland Telegraph Line an epic achievement.

The Overland Telegraph Line was finally completed in August 1872. It linked up with a submarine telegraph cable which had been laid between Darwin and Java, which then connected with the extensive British telegraph network, so providing Australia with its first telecommunications link with the rest of the world.

While browsing through the bookshelves of the local newsagent I recently picked up a paperback novel by Hugh Atkinson called "The Longest Wire". (Sphere books $ 1982) Although Morse code hardly gets a mention throughout the book, and.... "Apart from the historical facts, the main characters are fictional, and bear no relation to the actual history of its building", the story presents a good entertaining yarn and gives many details which one's imagination would probably overlook. When you remember that in 1870 when the line was built, there were no roads, let alone four-wheel-drives and engel fridges, you realise some of the difficulties involved. My favourite was the white ants eating the wooden poles, which required iron poles to be imported from Britain, to re-do the tropical section. It is interesting to note that when men began talking about an Overland Telegraph Line, they were treated like lunatics. Much as Morsiacs are treated I guess.

If you were looking for the poem CRTB by Frank Spruhan in Aprils column (which is the main poem I submitted), I was looking too. I hope to have room to re-submit it at a later date, unless the editor is holding it for a later issue. By the way, thanks for the enquiries, and my ribs are healed now and we (in Bright) are trying to get fit enough to snow ski this winter. Lets face it, there may not be many more opportunities!

73
Gil.

Coming Round the Bend

I well remember Charlie Teede,
Who used to work the races;
No need, indeed, to ask for speed,
He'd pace it with the pacers.
Lord help the man who "broke" him once
Or questioned his "creations";
On him a flood of scorn was turned,
The atmosphere with brimstone burned,
And Pitman, green with envy, squirmed
At his abbreviations.
"Te field got wl awa to ti
& as ty settld dwn
Te Shicer 1st t bk te li
ws flwd bi Jo Brown.
In close proxim ws Tired Tim,
Tn cme Arbtratn,

Bhnd te bunch ws Cntr Lunch,
Gd Luck and Hi Taxatn.
Ty whizzed alng (and so did Charles)
Wthout te least cessatn.
"Cr t b te topwt jumped
& got on trms wi Shicer,
Wo tn & tre bundl dumpd
Wh labld him a twicer."
I scrambled after Charlie
Like a trailer round a bend,
Then gave OK - but queried:
"'C R T B' u send.
Now what is that in aid of?
Enlarge a bit my friend.
The sounder nearly hit the roof
As Charlie scorched the line.
"U ort t be on te rabtproof
Or up at Doodlekine
Chasin poddies rnd te yd
Shd b ur chf pastime.
T tnk u cndt wrk tt out
It nrly mkes me sik.
Ani ole gin or rousabt
Cd write it wi a stik.
Fanci a man wo calls hmslf
A tgst askg tt!
A record O S vacuum
Is located neath ur hat.
D' u want it in oils bi Lambert?
Or carved on a marbl stone?
Ole "Winja" Mortill cd tke it
& ud nvr hr a moan;
Not spelt out li Ive dun fr u
Bt cut dwn t te bone.
"Wl I mst sa te bst dspla
Of ignrce Ive hrd,
O all te sqrtrs in WA
Ur crtnli te "BIRD"
& ani hrsh remks Ive mist
Ty all cn be inferd
'C R T B' - its knwn bi rote,
Wt wd ud ha me snd?
Its cmg rnd te bnd - u goat
COMING ROUND THE BEND!"
By Frank Spruhan (Telegraphist)

CLUB CORNER

Port Macquarie Field Day

Port Macquarie's Annual Amateur Radio Field Days will be held on Saturday, 10th and Sunday 11th, June 1989, at their big new venue -

Tacking Point Surf Life Saving Club, Matthew Flinders Drive, Lighthouse Beach, Port Macquarie.

Surplus gear sale - both days - no commission charges

Fox Hunts - trade displays - WIA book stall
Coffee - tea - biscuits on tap
Trophies * Prizes *
Free guessing competitions
Lucky registration prizes
Saturday lunch available
Sunday barbecue lunch
Saturday night smorgasbord -
soup, hot foods, sweets and wine
$6 adults, $3 children.

Fees Includes	Full Registration	Sunday Only	
XYL	$8.00	$5.00	Sunday
O.M.	$10.00	$7.00	Barbecue
Family	$20.00	$15.00	Lunch

Write or phone for programme
Oxley Region Amateur Radio Club
PO Box 712, Port Macquarie, NSW 2444
Telephone Secretary Bruce 065 838 913
President Peter 065 853 406
Remember Their Big New Venue
Tacking Point Surf Life Saving Club
Lighthouse Beach, Port Macquarie.

Sunbury Amateur Radio Group

This club has been formed to assist potential Radio Amateurs to achieve their aims; it has attracted membership from surrounding districts.

Meetings are held at the Sunbury High School, Racecourse Road, at 8pm on the first friday of each month. A weekly net is conducted on Wednesdays at 8pm on 146.450 MHz. Classes are held 7.30 p.m. Tuesday nights at the Sunbury home of Ian Morris VK3YVO.

The group welcomes membership enquiries. Contact John Canning VK3PBX on 744 4772.

The Dove Project

Do you know about Project Dove? Are you ready to take part in the project? Can you use it to take our hobby into the school classroom?

Think about it seriously and do your bit to use the Digital Orbiting Voice Encoder as an easy means of propagating amateur radio into your community.

VK3 Notes

INWARDS QSL BUREAU

After eight years service as the VK3 Inwards QSL Bureau Manager, Barbara Gray VK3BYK has retired for family and personal reasons.

This resulted in a temporary suspension of the Inwards Bureau operation. Steps are being taken to restore the service as soon as possible.

In the meantime we ask Bureau users to be patient. The WIA is taking the opportunity to reorganise the Inwards Bureau operation so it can provide an efficient service.

The Bureau handles an average of 8,000 cards a month and currently has 900 users registered. A major headache for the Bureau is the DOTC policy of instantly re-issuing callsigns. This has resulted in half of those registered with the bureau wanting cards for more than one callsign.

A callsign can be held by three or more people within the same year, each activating it and attracting DX QSLs, and all wanting "their cards" has considerably slowed down the sorting of cards.

As part of the Bureau reorganisation consideration is being given to how this intolerable situation can be overcome. An announcement on the new Bureau and its procedures will be made on the weekly VK3BWI broadcast and in this column.

WIA MEMBERSHIP SUBSCRIPTIONS — AN EXPLANATION FROM THE VICTORIAN DIVISION

Membership subscriptions are now made up of three parts. These are the Divisional component, a Federal component, and a levy for international representation.

The Divisional component will increase $3 for membership applications and renewals on or after July 1st this year.

You should bear in mind that the Victorian Division had already absorbed a $2 rise in the current Federal Component set last year.

Members of Australia's national radio society are being required to pay a levy of $2 each to fund WIA representation at the World Administrative Radio Conference expected in 1992 — and other important meetings leading up to the WARC.

From July 1st this year the Federal Component of membership subsriptions increases by $4. The membership subscription — the Divisional and Federal Components, and the WARC levy, will total $70.

A concessional rate will be considered when the WIA Federal Council meets next month, and at this time it is expected to apply to current pensioner grade members and possibly some others. The renewal period for 80 per cent of members occurs at the end of the year.

The amount of $70 will be on the renewal notices sent to those members in October. The membership subscription of $70 represents

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Radio Amateurs: Have you checked out EA lately?

No doubt most radio amateurs are aware that *Electronics Australia* is by far this country's largest-selling electronics magazine, as well as being its oldest (we began way back in 1922, as *Wireless Weekly*). But have you looked inside the magazine lately?

It's true that a few years back, the magazine went through a troubled time, and may not have been quite as interesting and exciting for a while. But in case you haven't heard, things are a lot different now.

Remember Jim Rowe, VK2ZLO? Jim used to be Technical Editor, and then Editor – back in the late 1960's and 1970's. You may recall some of the amateur radio and test equipment projects he developed, which proved to be extremely popular. Well, Jim is back at the helm of the magazine, and has been busy giving it a new lease of life.

You'll now find lots of new 'departments' in the magazine, including Solid State Update (with news of new semiconductor devices), Silicon Valley Update (news from the USA) and What's New in Entertainment Electronics. Plus all of your old favourites like Forum, The Serviceman, Circuit and Design Ideas and so on. And of course plenty of 'meaty' technical articles and contruction projects.

FEATURES IN THE JUNE ISSUE:

BROADCAST BAND LOOP ANTENNAS - PART 3

The third article in our series, describing a tuned loop and FET buffer suitable for DX reception.

IMPROVED FM RADIO MICROPHONE

Easy to make and tune up, with performance equal to many commercial models. Low in cost, too.

OLD TIME INDUCTION COIL - 2

Concluding the construction details, the author tells how to put it all together.

VINTAGE RADIO

This month we look at the 6J7 valve, and all of its relatives and descendants - including the 6C5 triode!

What about *amateur radio* projects? Well, there still aren't too many, at present – Jim Rowe's been a bit too busy! But he's *very* interested in boosting the amateur radio content, so if YOU have developed an exciting amateur radio project, please contact Jim by writing to him at EA, 180 Bourke Road, Alexandria 2015 or phoning him on (02) 693 6620 – to discuss the possibility of publishing it as a contributed article.

Take a look at the new, rejuvenated *Electronics Australia* – on sale at your newsagent at the beginning of every month. Or subscribe now, by phoning (02) 693 9517 or 693 9515.

Electronics Australia

Australia's Top Selling Electronics Magazine

HOW'S DX

New Countries Mushrooming?

Patrick Kelly VK2RZ, PO Box 41,
Ourimbah NSW 2258

There is quite a deal of muttering going on around the bands concerning the number of new DXCC countries mushrooming up all over the place. Radio amateurs are never short on some home-spun philosophy when given an opportunity, and DXers are not exceptions.

Most of these discussions start out with expressions of dread, and wondering as to where it will all end. You know serious things like "If one floor of the United Nations Bulding in New York can count for DXCC - why not every office in the Pentagon?"; "I only had five (countries) to go - do you think I'll need a new log book?"; "My DXCC countries list is now out of date", and "but I'm causing really bad TVI at the moment!". This carry on usually ends with something like - "Oh well, it'll give the big guns something new to work".

Roll On 400!

I received a letter from Hassan EP2HZ, giving me the state of play for amateur radio in Iran. Interesting as it was, it is unfortunate that there is still no possibility of legitimate operations from there in the forseeable future.

Hassan said that in the ten years since the revolution that saw the overthrow of the Shah, there have not been any licenced amateurs in Iran. He described the radio involvement of the thirty or so amateurs there as being very dangerous! Also, that in spite of this they are still strongly united by their love of ham radio, and hope that one day they can form a radio club. To end, Hassan told me that all their equipment was "home-brew" and always QRP!

Makes you think doesn't it!

Wallis and Futuna

Ron ZL1AMO had an enjoyable stay here operating as FWØBX. For his last visit in 1984, band conditions were very poor, and he was pleased to report that this time the openings to Europe were good. He made 8000 cw contacts and 3000 on SSB. QSL to his home call.

Conway Reef

Six members from the Cologne DX Group activated this remote location in the hope of claiming a new DXCC country. Using 3D2CR they were here for ten days, and attracted enormous pile-ups, with listening frequencies as wide as twenty kiloHertz.

QSL to DJ9ON for CW contacts and to DK9KX for SSB

Johnston Island

Peter KNØE/KH3 is an engineering contractor, and he expects his work for the U.S. Government to keep him here for about four months. QSL to PO Box 1139, APO San Francisco, CA, 96305, USA.

Bing's On The Road Again!

On the 14th of May Bing VK2BCH is setting off on his sixth DXpedition to the Pacific.

Here is his proposed itinerary:

. May 14 to June 7 in Rarotonga on the South Cook Islands. Call is ZK1XV.

. June 8 to 15 in Apia, Western Samoa as 5WIGY.

. June 16 to July 7 in Pago Pago, American Samoa. Call is VK2BCH/KH8.

. Depending on shipping Bing will pay a short visit to Tokelau ZK3, so no firm dates for here.

. July 8 to August 8 Rotuma Island by way of Suva, Fiji. No 3DZ callsigns at present.

Bing will be working all bands from 160 to 6 metres. For 20, 15, 10 and 6 metres he will be using a five element yagi, and for the low bands an inverted "V" and long wires.

QSL is direct only to Ronald "Bing" Crosby, PO Box 344, Forster, NSW, 2428. Do not send via the bureau and don't forget a S.A.E. and postage. IRC's or greenstamps are preferred.

Equatorial Guinea

After having kept several skeds at 2200Z and 0730Z, Manuel 3C1MB gave many VK's and ZL's this hard to work country on ten metres. Contacts were made at both times over both paths with the earlier daytime ones being made over the long path. QSL to EA7KF.

South Shetlands

Felix LU2ZO on King Georges Island has been reported active on 20 metres CW around 1140Z. QSL to GACW, PO Box 9, 1875, Wilde, Argentina.

Western Sahara

I picked up SØ1MZ for a new band country at 2136Z on 14.225. This is a new callsign from here and unfortunately I did miss the operators name. The QSL manager is EA2JG who also handles cards for Naama SØ1A and SØ1RASD.

Revilla Gigedo

The recent DXpedition, using the call XF4L, was very active with at least two of the international team on air most of the time. With never ending pile-ups, mainly due to the Europeans needing this one, and smooth operating, I'm sure the operators were pleased with their effort. QSL to OH2BN.

During a short break with Mary-Anne WA3HUP, one of the XE operators passed on the news that there may be an operator on the island after they leave.

Honduras

A surprise caller from this part of Central America was Kenny HR1KAS. We started out on 15 metres at 0620Z went to 40 metres, than 20 metres and 10 metres. While he was very readable on 40 metres he was unable to copy my report, and on 10 metres there was just too much QRM to even know if a contact was possible.

Kenny has been licenced for over twenty-five years so I am sure that some old timers will be happy to know that he is still around. QSL is direct, and he is OK in any callbook.

Rodrigues Island

If you are regularly on 10 metres around 0630Z, chances are that you have worked Robert 3B9FR. He has always been very active on this band, as well as 15 and 20 metres, but the good news is that he will soon have antennas on 40 and 80 metres. QSL to F6FNU with IRC's, no greenstamps.

Papua New Guinea

Several members of the Eastern Highlands ARC in Goroka have planned a weekend DX trip into the mountains, commencing on either the 3rd or 10th of June. They will be on air from 2300Z on the Saturday, and want to work as many stations as they can over the two days on 10, 15 and 20 metres.

No QSL information was given but they will be using the club callsign P29CEH.

Juan Fernandez

Rosa CEØMTY has been worked and heard regularly on 10 and 15 metres around 2100 - 0000Z. The only problem you may find is breaking the European pile-up, while her antenna is in that direction. QSL to CEØICD (who

is also active) or to CE3ESS.

Easter Island

After quite a few unsuccessful attempts to work Marco CEØDFL on ten metres, I finally made it. He is very easy to find on fifteen metrs on 21.290MHz around 0200Z, talking with Micky CE3ESS and other Chilean stations. Breaking into this QSO is not for the faint hearted, and not recommended, unless you want a lesson in manners from Micky.

Marco does use this particular frequency for his long periods of DXing at other times. He checks in regularly on 14.222 with VK9NS too, and on ten metres he works just above 28.500MHz. QSL to Marco A Meza Ramirez, PO Box 7, Easter Island, Chile. (Do not use callsign).

Turks and Caicos

It's not every day of the week you can find two stations from this part of the Caribbean working within a few kc's of each other on ten metres. On Grand Turk there was Leroy VP5LJ, and on Providenciales there was Bob VP2D. QSL to WN5K and W3HNK respectively.

Look out for two new YL operators from Providenciales. Karen and Alison have been successful in passing their examinations and should have their callsigns by now.

USSR

LLoyd (W6KG) and Iris (W6QL) Colvin are soon to visit all fifteen Soviet Republics. I have had several reports of Stateside visitors being allowed to operate in the Soviet Union with UA callsigns. So this next DXpedition by the Colvins certainly shows the benefits amateur radio has received from Glasnest.

Kenya

After his recent stay in Sydney, and here on the Central Coast, Rod 5Z4BH is now back in Nairobi. He is usually on air on weekends, and operates on SSB, RTTY and Packet.

Rod's line of work keeps him on the move and this accounts for the impressive list of callsigns he has operated with - 9G1RT, C5AZ, 5T5AZ, TL8AZ, TU4BB, EL7AE, 3D2RH, /AH2, ZLØAGS, VK2EFI, VK1HR, /5NØ, /VS6, /DU1, WA7NEV, WB6BOW, KB7NK and 9X5AA.

Also active from Nairobi are Ben 5Z4BP and Christine 5Z4LL. I have yet to find Christine on 10 metres, as she does appear to spend most of her time on 20 metres, but Ben can be found on most of the DX nets, as well as working all bands.

QSL routes are:
5Z4BH to KE3A
5Z4BP to PO Box 73029, Nairobi, Kenya.
5Z4LL to Christine Sachse, PO Box 14425, Nairobi, Kenya
5Z4RT Herman - Christine's OM (late addition)

Bounty Mutiny Day on Pitcairn Island

To celebrate the bicentennial of this historic event, seven of the islands amateurs VR6TC, VR6MW, VR6KB, VR6ID, VR6YL, VR6KY and VR6CL operated over a twenty four hour period on the 28th April commencing at 0001Z. Contacts were only made on 10, 15 and 20 metres with signal reports being accompanied by a contact number for QSL purposes.

A special commemorative QSL card is available if you send an SASE to- Bounty Mutiny Day, 7462W Lawler Ave, Niles, IL 60648, USA.

Rwanda

Two operators have been using the callsign 9X5KP. Colin has checked in to the ANZA Net several times and Linden is also active with the call. I don't know who owns the licence, but the QSL route for both is W4IEN.

QSL Information

AHØD	-JH2BNL	USØSU	-UAØKK
(Saipan - Marianas)		VK2FVN/VK9N	-DL8FP
D68JL	-AK1E	VP2EXX	-KC8JH
FG5CL	-FG4CL	(New Man - not AA4FS)	
FG5R	-W7EJ	VP2VM	-KW1K
FR4FD	-F6FYA	VP5T	-NM2Y
HBØLL	-DJ9ZB	VP5V	WD4JNS
JAØOWD/JDI	-JH1AJT	VP8BWL	-G3NKQ
(Ogasawara)		VP8PU	-WA4JQS
KH6JEB/KH7	-Home Call	VS6CT	-KC9V
PZ2AC	- WA4JTK	XX9KA	- KC9V
S92LB	-Callbook	ZF2NR	-WA4HFB
T3ORA	-KN6J	ZK1TB	-W7TB
T32AF	-K7EHI	3AZAH	-Callbook
T5MF	I2MQP	3B8FQ	-Callbook
TE89R	TIØRC	7S3HK	-SM3CER
TU4NW	-AL7EL	7X2AK/3-Bureau (Direct)	
TY8BYL	-DJ6SI	9Q5NW	-AL7EL

CN8MW	Mike, PO Box 162, Tangiers, Morocco
FK8EW	Carl, PO Box 465, Noumea, New Caledonia
FO5DB	Serge, PO Box 813, Papeete, Tahiti, French Polynesia
FOØBEF	Mgr. FE1JCN (not in callbook) PO Box 5, F-63018 Blanzat, France
J39AL	Gil, PO Box 448, St. George's, Grenada
NY6M/KHZ	Gary Dein, 216 Holden Street, NCWP, FPO, San Francisco, CA, 96630 - 1847, USA
UP2BKY	Stasys, PO Box 36, Telshay, 235610, USSR
ZS3J	PO Box 90606, Eros, Namibia
3D2AG	Antoine, PO Box 14633, Suva, Fiji
5W1AT	Marty, PO Box 2015, APIA, Western Samoa
7P8EG	Hans, PO Box 7583, Maseru, Lethsoto

Final Comment

All too often I hear DX stations and QSL managers being held up during pile-ups, nets and list operations, by operators enquiring about their QSL cards. Now this ill-considered behaviour not only can cause embarassment, whether intended or not, but it also inconveniences everyone else on the frequency. So unless it is absolutely necessary to take this sort of action, then please be patient.

Well that about wraps things up for this month, except to thank VK2's - BCH, HD, PS, WU, VK4FAX, VK5QJ, VK9NS and all those who have passed along information on air.

Good DX!

Rotary Conference

There will be an international conference of all the Rotary clubs in the world, in Seoul Korea, from the 21st to the 24th May, 1989.

News received from KARL (the Korean Amateur Radio League) indicates that there will be a special event station operating during that period with the callsign HL89ROAR.

Submitted by Stephen Pall VK2PS

Distinguished U.S. Amateur Honoured

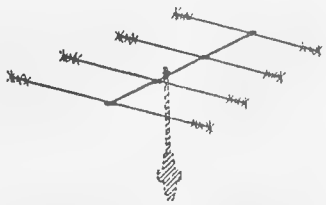
Hugh Archer, W8JA, from Dearborn, MI 48124 USA will be elected as world President for the year 1989 - 1990 of Rotary International at the International Conference at Seoul on the 24th of May, 1989.

There are 23943 rotary clubs in the world with a membership of 1,063,123 in 465 districts and 164 countries and geographical regions.

In Australia and Papua New Guinea, there are 1341 rotary clubs with a membership of 51,407.

Submitted by Stephen Pall VK2PS
ar

ALTRON



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EDUCATION NOTES

Devolvement Soon?

Brenda Edmonds, VK3KT

Discussion with Mr. Alan Jordan, Manager of the Regulatory Division of DOTC, at the recent WIA Convention confirmed the Department's intentions to have the Devolvement of examinations completed by February 1990. The newly appointed Examinations officer has been joined by two other officers seconded for a few months to complete the arrangements, and finalise the production of the new Regulations brochures. Present information is that it is unlikely that the brochures will be available for a couple of months yet, so the August examinations at least should still be on the old (1978) Handbook.

For the benefit of those who may be considering arranging examinations but have not as yet indicated their intentions to DOTC, I would like to quote a section of the letter received from the Examinations Officer following his appointment:

"The current legislation does not allow us to approve or accredit individuals or organisations. "Accreditation", as we interpret the word in the current instance, means that an individual or organisation has presented an examination to the Department for approval. To be accredited, the examination itself will have been approved as to form, balance, degree of difficulty, venue, administrative and invigilation arrangements and all the other things which will be spelt out in the Accreditation Package."

The letter was accompanied by a form for completion to indicate our continuing interest in producing examination materials, so we assume that all others who had earlier indicated interest will have received similar letters. If there are members who now wish to become involved, it would perhaps be wise to approach the Department with a request for information as it becomes available.

Most Divisional representatives at the Convention stated that their Divisions intend to prepare examination materials and have them accredited. If the "accreditation" also has to include approval of the physical arrangements such as venue, it may become more difficult for us to share approved papers. I was anticipating from the earlier information that a paper approved for, say VK2 Division could later be used by another Division, so saving both us and DOTC both time and effort. This is one of many points which still remain to be clarified.

It is to be hoped that the initial enthusiasm for devolvement shown by the amateur body will not have completely evaporated by the time the machinery is fully in place ar

The VK3 WIA Answers its Correspondence

All letters received by the WIA Victorian Division are acknowledged. Since the opening of the new Divisional Headquarters in Ashburton in February and the hiring of a General Manager Secretary, all incoming mail is logged on a computer.

It is true that under the previous overloaded volunteer system correspondence was not always handled in an appropriate manner. But since February, a professional approach has been taken to all administrative operations of the Victorian Division.

Those of you who have communicated in writing to the Division know that a prompt reply is received — commonly within 48 hours of receipt. Matters that require checks with the responsible office bearer or need to be considered by a Council Meeting can take a little longer.

Just ask any new member who has joined the Division this year how long it took to get a response. New member applications are generally handled within the next two working days. Under the previous system it took up to six weeks to process such aplications.

Provided Australia Post delivers — all correspondance received by the WIA is handled in an efficient business-like manner.

1989 CALLBOOKS

THE QSL BOOK!

Continuing a 68 year tradition, we bring you three new Callbooks for 1989, bigger and better than ever!

The North American Callbook lists the calls, names, and address information for 495,000 licensed radio amateurs in all countries of North America, from Canada to Panama including Greenland, Bermuda, and the Caribbean islands plus Hawaii and the U.S. possessions.

The International Callbook lists 500,000 licensed radio amateurs in countries outside North America. Its coverage includes South America, Europe, Africa, Asia, and the Pacific area (exclusive of Hawaii and the U.S. possessions).

The 1989 Callbook Supplement is a new idea in Callbook updates, listing the activity in both the North American and Internationa Callbooks. Published June 1, 1989, this combined Supplement will include thousands of new licenses, address changes, and call sign changes for the preceding 6 months

Every active amateur needs the CALLBOOK .... The 1989 Callbooks are now in stock at Stewart Electronics. Order early to avoid disappointment (last years Callbook was sold out) Why not order the set of two and save $6.00 they are post free too .... If you order the 1989 update we will send it to you when received Air Mail from the USA.

☐ North American Callbook	Stock # BX212	$52.50
☐ International Callbook	Stock # BX213	$52.50
☐ Special The two Callbooks	Stock # BXS004	$99.00
☐ 1989 Callbook UPDATE (June 1989)	Stock # BX221	$18.50

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Parramatta, NSW 2124
(109 Wigram Street, Parramatta)
Phone: (02) 689 2417

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7 to 9 pm **Wed**

SPOTLIGHT ON SWLING

Long Path Signals

by Robin L. Harwood VK7RH
52 Connaught Cres
W Launceston 7250

As expected, HF conditions during the daylight hours have improved, especially on the 25 and 31 meter broadcasting allocations. We are hearing the European stations beaming to North, Central and South America quite well as early as 0100 UTC. About now, signals should be appearing across the South Pole below 7.5 MHz from 0200 UTC. You will notice the fluttery note on signals.

Many European domestic broadcasters have all-night programming, particularly in West Germany in the 49 meter band and these normally are drowned out by the larger senders at other times. Listen for Radio RIAS in West Berlin on 6005 kHz from 0330 UTC, as it is in German naturally, although funded by the United States Information Service. There are also other stations both in the German Democratic Republic and the Federal Republic of Germany also in the 49 metre allocation.

But you might take the time to tune down on the 60 and 90 meter tropical band broadcasting bands from 0400 for signals from Africa signing on. My spies inform me that southern and central regions of Africa will be audible this year. Yet beware, Latin American signals could also be on, although they mainly are in either Spanish or Portuguese. The Africans will be in indigenous local languages or either English or French.

The "World Service of the Christian Science Monitor" has commenced utilizing their two 500 kW senders in Cypress Creek, South Carolina and have an excellent signal into this region, compared to WCSN in Maine or KYOI in Saipan, their other sites. I am hearing WSHB best on 13760 from 0400, when they broadcast in either Spanish or English, although they do target Australasia from 0800 UTC on 17855 kHz in English. They have cut back KYOI's daylight schedule as they wish to upgrade their facilities, with the intention of installing a second sender and improving their antennas.

Another interesting region I have been casually observing of late is between 26 and 28 MHz. Naturally there are plenty of CB signals, both legal and illegal, yet there are some interesting low powered carriers that have nothing to do with CB.

There are some harmonic or parasitic emissions from various broadcasters, mainly in South-East Asia and Africa being noted.

Often the fundamental is not heard, while the harmonics are. Radio Nepal has been heard on 30030 KHz at 0900 UTC in W.A. It is the sixth harmonic of 5050 kHz which is not audible at that time, of course. Radio Beijing and other Asians are also heard, although these are all well down at about S1.

The next scheduled transmission from the Red Cross Broadcasting Service to Australasia will be on the 26th of this month from 0740 to 0757 on 13685 kHz from Swiss Radio International. At 1310 to 1327, the Red Cross broadcasts from Beijing on 11695 kHz. Transmissions are in English.

Well, that is all for June. Until July, all the best and good listening! ar

Lockerbie & Raynet

The disaster when a Pan Am jetliner crashed at Lockerbie in Scotland was brought to the world via television pictures and newspaper reports.

A little known fact was the role played by radio amateurs through the Raynet organisation after Flight 103 ploughed into Lockerbie.

A newspaper clipping of the Glasgow South & Eastwood Extra dated January 12, 1989, and supplied to AR magazine by the WIA ACT Division, tells the story.

"Police chiefs who master-minded rescue operations at Lockerbie have praised the unrelenting work of a Netherlee amateur radio enthusiast," the story headlined Radio Lifeline said.

Ronald Cowan the Raynet Regional Controller mobilised his team and made a mercy dash down the A74 motorway to Lockerbie accompanied by ambulances. Raynet was on air within 10 minutes of arriving.

The Raynet team continued their operation for 10 days. Visitors to their station included Prime Minister Margaret Thatcher.

Chief Constable John Boyd summed up their work as "the vital cog in the wheel of communication."

He said: "Their professionalism proved a tremendous help in the vitally important field of communication."

At the height of the operation 112 Raynet members were in the field. They serviced the police, armed services, regional emergency planning officer, the volunteer search and rescue dogs, police underwater search teams, and the Aircraft Accident Investigation Bureau. ar

AWARDS

WIA Antarctic Award Marks Mawson Achievement

The WIA Antarctic Award has been established - the first new federal WIA award for some years. It needs confirmed contacts with ten amateur stations conducting valid operations in Antarctica. The ten must include stations licenced by at least six different government authorities, and one must be a VKØ.

Antarctica is defined as the land mass, including islands and permanent ice shelf below latitude 60 degrees south. (This, incidentally, excludes Heard and Macquarie Islands. These are sub-Antarctic, not Antarctic).

QSOs may be on any amateur band, including the WARC bands, but crossband contacts are not eligible. All modes, except those using terrestrial repeaters, are acceptable and endorsements are available for particular bands and modes. QSOs with aircraft or with ships under way, or capable of being put under way, are not eligible.

QSOs must have been made after 0001 UTC, February 23, 1988.

Mawson Anniversary

This date was chosen to mark the 75th anniversary of the first two-way radio exchange between the Antarctic continent and the world outside. On February 23, 1913, the exploration team led by the Australian geologist and explorer Douglas (later Sir Douglas) Mawson sent messages to the Australian Governor-General and to King George V from their base at Commonwealth Bay.

Sadly, the messages reported the deaths of Mawson's two companions, Ninnis and Mertz, during an exploration trip from which only Mawson returned.

The messages to Australia and the UK went by relay, through a station set up on Macquarie Island in 1911 when the expedition was on its way to Antarctica. More than a year passed before Mawson's party was able to make contact with it, the main trouble apparently being difficulty in maintaining an antenna in the blizzard conditions at Commonwealth Bay.

In his book, The Home of the Blizzard, (6th ed., 1938, pp. 303-304), Mawson described the event:

> On the night of February 15, Jeffryes suddenly surprised us with the exciting intelligence that he had heard Macquarie Island send a coded weather report to Hobart. The engine was immediately set going, but though repeated attempts were made, no answer could be elicited. Each night darkness was more pronounced and signals became more distinct, until, on the 20th, our call reached Sawyer at Macquarie Island, who immediately responded by saying "Good evening." The insulation of a Leyden jar broke down at that point, and nothing more could be done until it was remedied.
>
> At last, on February 21, signals were exchanged, and by the 23rd a message had been dispatched to Lord Denman, Governor-General of the Commonwealth, acquainting him with our situation and the loss of our comrades and, through him, one to his Majesty the King requesting his royal permission to name a tract of newly discovered country to the east, King George V Land. Special messages were also sent to the relatives of Lieutenant BES Ninnis and Dr X Mertz.

Earning a Low Numbered Award

Knowing that many amateurs aim at winning certificate no. 1 when a new award is announced, I have publicized the Antarctic Award widely overseas, and made the following rules to give all amateurs and SWLs worldwide a fair start in the race.

All certificates will be numbered and issue will start on July 31,1989. Valid applications received by that date will be ranked by date and time of the last QSO needed to qualify for the award.

The first to qualify will receive certificate no. 1, and so on. Endorsements will also be given for the first to achieve the award on each band and mode.

After the applications received by July 31 have been dealt with, certificates will be numbered in the usual way, i.e., as applications are processed.

However, "firsts" for various modes and bands may still be given at the discretion of WIA Federal Awards Manager.

The usual WIA verification rules apply. Cards need not be sent if two amateurs certify on the list that they have personally inspected the cards. The list, of course, must be in the form of a log extract, giving date, time, frequency, mode and signal reports exchanged.

However, the WIA Awards Manager reserves the right to call for the cards or photocopies of them.

The Antarctic Award is free to WIA members. Others must pay $A5 or $US5 if overseas.

Liberia: Special Prefix and Award

Liberian amateurs can use the special prefix 6Z during July, and an award is offered to amateurs who work five Liberian stations on any band or mode during the month. It is also available to SWLs.

The event marks the 142nd anniversary of

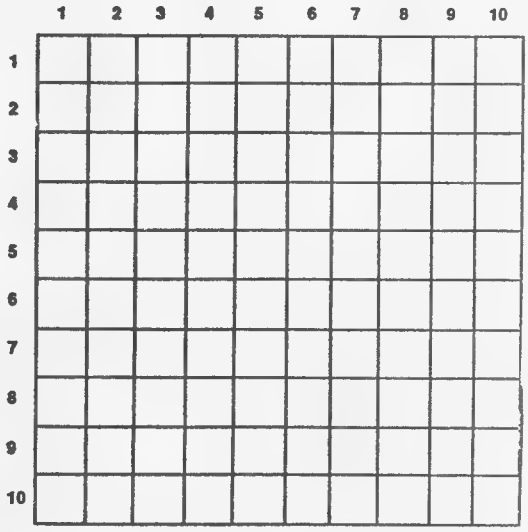
Morseword No. 27

SOLUTION PAGE 48

Clues

Across
1 Arrive
2 Part of the face
3 Went astride
4 Akubras
5 Listen
6 Pen
7 Chichi
8 The Greek X
9 Femur is one
10 Priest's robe

Down
1 High pitched sound
2 Peace
3 Curve
4 Repair
5 Abel's brother
6 1989 for example
7 Par
8 Donate
9 Mothers
10 Raps



Liberian independence, and all cards for QSOs during the month must be sent to its QSL manager, Robert F Wynhoff, K5HUT, 12915 Memorial Drive, Houston, TX 77079. To ensure a prompt return, a SAE and return postage should be included.

However QSL cards are not required for the award. A log extract certified by a WIA official or two licensed amateurs will do. The award costs US$5 or 10 IRCs and applications should go to the LRAA Awards Manager, PO Box 10-0987, 1000 Monrovia 10, Liberia.

VK Awards Survey

In April I sent enquiries to more than 70 managers of awards offered by VK divisions, zones, clubs and other groups which have been mentioned in WIA callbooks or in AR.

I need to know which awards are still being issued and to have up-to-date information on rules, costs, addresses, etc.. I hope that this can be then published by the WIA. Apart from that, I need the data to respond to enquiries from amateurs and SWLs, both local and overseas, wanting details of VK awards.

I am proposing to close the survey on June 30. If I have not had a response by then, I will assume that the award in question is defunct. It will not be included in the WIA list of VK awards and editors of worldwide guides to amateur awards (see my columns in the February, March and April issues of AR) will be advised to delete it from future editions.

A Still Bigger Awards Guide

In March AR I described G4FAM's "Amateur Radio Awards", published by the RSGB, as "the most comprehensive" book of its kind. What am I to say now, having received a copy of "The KIBV Directory of DX Awards" which gives the rules for more than 1,050 awards? That's about 40% more than in the G4FAM book.

Ted Melinosky K1BV has produced his directory of 290 pages in loose-leaf format punched for acceptance into a standard 3-hole office binder. This gives him flexibility in up-dating his directory, which he proposes issuing annually.

Apart from award rules, it includes reprints of general award information of several national amateur societies (e.g. JARL's list of cities and prefectures needed for some of its awards) and other data such as UN membership, and an islands of the world list.

The RSBG book takes less space in the shack and has check-lists which can be filled in en route to qualifying for particular awards. But for sheer number of awards, Ted's directory wins easily. Also, several years elapsed between the 1988 edition of the RSBG book and the previous one. Ted's method and format makes it possible for him to keep the data much more up-to-date with annual editions.

Ted aims at covering costs but his venture is essentially non-commercial, designed as a service to amateurs and SWLs.

You can obtain his 1989 edition for US$14 (surface mail) or US$21 (airmail) from Ted Melinosky, K1BV, 525 Foster Street, South Windsor, CT 06074-2936, USA.

BOOK REVIEW

Rodney Champness VK3UG
2/95 Benalla Street
Benalla 3672

Secret warfare

by Pierre Lorain,
translated by David Kahn.
Published by Orbis Publishing.
ISBN 0-85613-586-0

You might say "Not another book on all sorts of clandestine war activities"! Most of the books that the general public, including us radio amateurs, have read have been more about the exploits of all sorts of under cover agents, spies, etc.

This book is rather different and concentrates on communications and supplies, and briefly how they were used in the second World War. A very large section of it is devoted to the spy sets that were used during WWII. A bit about the history of their design, use, limitations, and last, but not least, pictures - or should I say - drawings of them and copies of some of the schematic circuit diagrams. Older amateurs will remember the Type 3 MKII and the Type A MKIII. These sets are described in the text as well as a number of other "spy" sets made before and after them. Each type had its particular niche. Would you believe, there was a 51/1 transmitter. It measured about 5.75" x 4.5" x 1.5" (150 x 115 x 38mm). In this tiny package was an AC power pack, 3 CV136 valves, capability to tune 3 to 10.5MHz, and as for all of the "spy" sets, it had only CW capability via an in built key, and had an output of up to 4 watts. Quite a performance for such a small set during WWII, when you consider the size of the normal domestic broadcast receiver of the day.

We all know that spies used various codes to make it difficult or impossible for the enemy to know what the messages were about. If you are keen on this side of communications, as well as the radio equipment used, you will find the chapter on Ciphers most interesting.

Have you ever thought how the aircraft from Britain found isolated little fields in the dark and even managed to land in one piece and then take off again? On the ground, the resistance had a small radiotelephone called "S-Phone Type 13/Mark IV (1943)" - being a small UHF transceiver, complete with directional antenna. It was not capable of being heard on the ground further than about 2 kilometers, but able to be heard up to about 65 kilometers at 10,000 feet (about 3km). The equipment in the aircraft was able to determine in which direction the aircraft should head to approach the landing site. Another device used to indicate how far away was the landing site is two pieces of equipment called "Rebecca" and "Eureka" - Rebecca in the aircraft and Eureka at the landing field. Interrogatory pulses were sent out from the aircraft and the Eureka device replied. The time lapse and direction indications showed the aircraft crew how far away they were from the field and on what heading.

If your specialty is weapons, and various explosive devices, there is quite a large section devoted to these.

The Germans did have quite good Direction Finding facilities, but the tactics used by the resistance fighters with their radio operations meant that not a great deal of success was achieved in silencing the radio transmitters.

This is probably not the book for everyone, but it is an extremely interesting one for anyone who is interested in the equipment used during WWII by the resistance fighters, mostly in the European theatre. If, like me, you have some of these interesting little spy radios, you will find this book of interest to fill in some of the gaps in the information you might have on the history of these remarkable devices. My feeling is that James Bond of 007 fame, if his time had been in the early '40's, would have loved to put his hands on many of the devices described in this book.

It is not an easy book to obtain and you will probably have to order it, and it is not cheap either - at around $35, but it contains 185 pages of top notch information.

Radio Theory Handbook For Amateur Operators Errata

The above publication written by Fred Swainston VK3DAC was reviewed in the August edition of AR magazine. Since then and following consumer demand, the book's publishers have issued a double-side A4 sized errata.

It was believed all known purchasers of the book had already been supplied with an errata sheet. The publishers are Prentice Hall of Australia Pty. Ltd., 7 Grosvenor Place (PO Box 151) Brookvale NSW 2100. Their phone number is (02) 939 1333 or they can be contacted on fax (02) 938 6826.

ALARA

Our Mavis

Joy Collis VK2EBX
PO Box 22 Yeova 2868

On 6 June 1989, Mavis Stafford VK3KS will be celebrating 50 years as an amateur radio operator, and friend to hundreds of enthusiasts around the world - a wonderful achievement, and certainly cause for celebration.

Mavis' success story had its small beginnings in the little Victorian town of Minyip in 1939 when the local school teacher, boarding at her family's home, was endeavouring to coach her brother in Morse Code. Mavis became interested, learned the Code and the theory, and passed her exams on 30 May 1939, to gain her Certificate of Proficiency. She became VK3KS on 6 June 1939.

Radio operation became a reality for Mavis with the use of a 5 watt crystal controlled transmitter, her first contact being with Les VK3XF. Unfortunately, storm clouds were gathering, and the outbreak of World War II in September 1939 saw the suspension of amateur radio transmission.

In 1943, Mavis married her "teacher" Ivor VK3XB. There was no electricity connected to their East Gippsland home, so when they recommenced radio activity, it was with a 2 1/2 watt input battery powered rig, Mavis being one of the very few YL operators in Australia at the time.

In 1951, they moved to Box Hill South, gradually building up a well-equipped shack, and tower to support the DX beam. A far cry from the early days!

Mavis' favourite mode is CW, and for her it is a special language. In 1966, she became one of the first YL members of the First Class Operators' Club, which requires 25 words a minute Morse and the sponsorship of at least five other members - not an easy organisation to enter. Mavis' sponsors came from around the world, attesting to her popularity and proficiency with the key.

In spite of this recognition, she is always ready to slow down from the speed of the "hare" to that of the "tortoise" in order to assist someone nervously struggling to come to grips with the Code, cheerfully spending time assisting and encouraging the learner towards confident CW operation. Her patience in this direction is well known.

Mavis was an inaugural member of the Australian Ladies' Amateur Radio Association, taking an active role in all ALARA functions and seldom missing "on air" meetings and regular nets. For the last eight years she has been the Awards Custodian, and Historian since 1983. In this capacity she has written up a very comprehensive history of ALARA since its inception in 1975, working from what records were available, and her own memory of events. She is the only Life Member of ALARA, an award justly merited by all the hard work she had done on our behalf.

Mavis pictured at the VK3KS/VK3XB Rig.

Mavis has visited, and been visited by, many amateurs from around the globe as well as within Australia, and the hospitality extended by both Ivor and Mavis is legendary. They have been members of the Old Timers Club since 1976, and Mavis is a member of several YL clubs, including YLRL, CLARA, WARO, JLRS and YL ISSB.

She is an active participant in contests, particularly YL contests, and her impressive and lengthy list of awards includes Australian DXCC (284 countries confirmed on CW), YLRL/DXYL, Worked All States YL, YL-DXCC, Worked All Countries QRP, first place CW for Australia in 11th. All Asia Contest and First, three times in the World DX Hager Award.

Mavis' other interest include crocheting, knitting and gardening, and a family of three children and six grandchildren (none of them amateurs at the present time). Radio involvement still takes up much of her time, however, with regular nets and skeds forming a pleasurable part of her life.

She has an extensive knowledge, learned from long experience, of correct radio operation, QSL-ing, Contest logs, etc., and is never too busy to help a newcomer on air along the path to confident radio operation.

We salute you Mavis! You are a shining example of what amateur radio is all about, and hundreds of well-wishers everywhere will be with you in spirit as you celebrate your 50 years. Here's wishing you plenty more contacts, and many more enjoyable hours with amateur radio.

Good on you, you've "done us proud."

(I would like to thank my anonymous "informant" for supplying the information used in this article.)

Continued from page 51

about $1.30 a week. The Divisions are facing cost increases which cannot be absorbed.

The Victorian Division is faced with an immediate escalation in the operation of the QSL Bureau. Australia Post has changed the parcel categories rates for international mail, and there's also a general rise in postal charges. The Outwards QSL Bureau postage bill will increase by between $1,200 and $1,500 per year. The Outwards Bureau is still being run entirely by unpaid labour. However the Inwards Bureau is a different matter. As members appear no longer prepared to supply sufficient volunteer labour it is now necessary to put it on a commercial basis. We are unable to pay full commercial rates but a major radio club will undertake this onerous task for a payment. Added to this is the setting up and initialisation of about $3,000 worth of computer equipment needed to run the bureau efficiently. The WIA Victorian Divisional Council — your elected representatives — is sure this Division will continue to attract a good level of membership despite the increase in membership subscription levels.

'5/8 WAVE'

ALL went well despite shaky start

Jennifer Warrington VK5ANW
59 Albert St
Clarence Gardens 5039

Our Clubs' Convention on the weekend of 7th - 9th April, was a most successful event, despite the very shaky start. There was a great deal of panicking done when, three hours before the weekend was due to start, we discovered that we were not booked at the venue! Thanks to prompt actions of Bill and Gill Wardrop, we were able to use Ridgehaven Primary School, which was considered by all to be a very good alternative venue. It was a bit harder on Gill and the ladies who had to cater in more difficult circumstances, but who did a magnificent job nonetheless. Although we were disappointed not to see more Country Members, perhaps it was just as well, in some respects, those that did attend were accommodated at the home of Rowland and Pam Bruce.

Bill Roper VK3ARZ, our Federal Secretary/ Manager, was our Guest of Honour for the weekend and was very informative, both throughout the weekend, and particularly at the informal Question & Answer session that he held on the Saturday night. Our grateful thanks to all those who helped to "save the day" and to make the weekend such a success. Clubs represented were, Adelaide Hills (VK5s KGS & RG), SA ATV Grp (KTV, ACF & WA) South Coast (KAK), Elizabeth (ZSV), Moonta Scouts (BL), 2nd Adelaide Scouts (Peter Koen), Lower Murray (JP & ABW), ACBRO (Brian Harrison & Bob Kay), SAPUG (RA) Port Adelaide (BJM) & Alice Springs (VK8KRX)

A corrected copy of the minutes, also a Federal Convention report, will be sent out to all clubs in the near future. Incidentally, we now have a position on Council called "Convention Co-ordinator". (Yes, you guessed it, you'll be able to blame me if things aren't booked and don't run like clockwork next year!)

VK5 Clubs Convention Sat 8th April barbecue lunch. Lto R: John VK5BL (Moonta Scouts), Gordon VK5KG (Adelaide Hills), Ian VK5KIA (WICEN Director) and Bill VK5AWM (Treasurer, now Federal Councillor).

WELCOME..... to John Mc Kellar VK5BJM, and Ben Broadbent VK5ABE our new members on the Divisional Council. Ben has been co-opted to replace a member who will be leaving us shortly. We hope that they will both enjoy their time on Council. Next month a full list of Council members and positions.

Rowland VK5OU, has volunteered to take over the running of the QSL Buro from John Gough VK5QD. We were sorry to lose John's services and thank him for the time and effort he and his family put into it. I understand that Rowland made the sudden decision after hearing that a group of young ladies had offered to help sort the cards! (Thanks for taking it on Rowland, whatever your reasons!) THE NEW BOX NO FOR THE QSL BURO IS PO Box 10092, Gouger Street, Adelaide 5000.

OLD TIMERS NOTES

RAOTC 14 MHz QSO Party

Compiled by I Stafford VK3XB for John Tutton VK3ZC who is away overseas at present.

This QSO party took place on 13th March, with CW around 14050 kHz and SSB around 14150 kHz.

Logs submitted indicate that 32 old-timers (only 5 were aged under 70) participated, comprising 17 from VK and 15 from ZL.

Due to the solar flare and the resultant fade-out, operators were somewhat frustrated, but scoring standards were maintained and would have been much higher if there had been greater participation.

Scores:

Call Sign	Points	Mode
VK3JA	880	CW/SSB
VK3KF	800	CW/SSB
ZL2KU	700	SSB
VK3VF	680	CW/SSB
VK7RY	560	CW/SSB
VK3NV	560	SSB
VK2AHU	560	CW/SSB
VK2AKE	455	CW
VK3AMB	300	CW/SSB
VK3ZC	175	CW
VK2KA	90	SSB
VK5RK	45	CW/SSB

New Zealand stations preferring to submit unscored logs were: ZL4AI, ZL1CD, ZL4DU, ZL1VX, ZL3JF, ZL3BJ, ZL1LR, ZL2AB, ZL2AT and ZL4ID. We thank them for their participation.

Next QSO parties are scheduled for:
Monday 7th August on 80 metres.
Monday 14th August on 40 metres.
Details are in the OTN Magazine Number 5.

It would be great to have a couple of hundred or more participants. Let's show these "young squirts" what we can muster!!!

SILENT KEYS

Frank Shiells VK3CAK

We regret to announce that Frank passed away at Easter this year following a short period of illness.

Frank became interested in the hobby in later years and was a keen and regular member of the Tuesday morning group at Moorabbin Amateur Radio Club.

While interested mainly in HF and DXING he spent considerable time on the road in his caravan with the RACV Caravan Club of which he was a life member operating portable.

The VK3 Division forwards its condolences to Frank's wife and family.

Henry Pearce VK3EN

Henry Robert J. Pearce VK3EN was the father of Melbourne's Metropolitan Fire Brigade (MFB) radio network.

He joined the MFB workshops staff in 1924 after leaving 3AR where he assisted with the installation of their transmitter in a'Beckett Street, Melbourne.

Before that he worked for some years in the electrical workshop of Oliver J. Nilsen.

During 1924 the MFB obtained permission from the Radio Department to experiment with radio as a means of communication. A licence was granted with the callsigns of 3EH and 3EJ Portable.

Henry wrote an article "Radio and Electronics in the Brigade 1924-71" which was published in the MFB magazine.

The article has a sub-heading 'MFB First to Equip Applicances with Radio in Australia'.

The MFB workshops had to build its own equipment - transmitters, self excited oscillators with a power of 25 watts, and receivers.

It was found that more transmitter power was necessary for reliable working so the Radio Department granted an increase in power to 100 watts.

At about this time Henry took out his own amateur station callsign VK3EN.

The MFB was assigned the callsign VKD until 1971, when it switched to UHF, and it has been VKN8 since.

Those who saw Henry on the job repairing the MFB radios used to say he knew every radio by its first name. He knew their previous faults and particular quirks.

This intimate relationship between man and radio came about because the MFB workshops built their own equipment up until 1971 when commercial UHF gear was used.

He was held in high esteem by those in the MFB from the members of the board of management and down through the ranks of firefighters.

Henry lived for many years in Cromwell Street, Caulfield, where his backyard radio mast and antennas were a landmark.

He homebrewed a lot of his early gear and antennas. Henry was a stalwart on the 160 metre net in Melbourne - some would say the net was his life.

The mobile antennas he built for the 160 metre band were well known, and most likely a carry over from his MFB days when the Brigade operated on 180 metres at the top end of the broadcast band.

The antennas included helical whips and loaded whips. Henry broke his hip while bending metal for an antenna and it appeared he would be confined to a wheelchair.

However through determination he got back on his feet again. Later he suffered an electrical shock which caused a deterioration in his eyesight.

The agile and active old timer remained active in the hobby until the end and had a keen interest in receiving Amateur TV, and listening to Hi Fi music.

Henry Pearce, a pioneer in the field of mobile radio and well liked decent chap, became a silent key on February 8, 1989. Sincere condolences to his son David, family, and friends.

Jim Linton VK3PC.

Silent Keys for June

We regret to announce the recent passing of:

Mr H T W Griffiths	VK2FO
Mr T Allan	VK2DAX
Mr N Ericsson	ex-VK2MF
Mr Frank Shiells	VK3CAK
Mr Reg Carter	VK5ACQ
Mr J G Denny	VK6NT
Mr R G Stitfold	VK6RS
Mr J Klinge	VK6AKL

ABC Radio National Early Wireless Programme

The Social History Unit of the ABC is currently running an eight part series of Australian Radio stories. It is broadcast each Sunday on Radio National at 1.30 pm and repeated on Thursday on regional stations at 7.30 pm.

Entitled "Bright Sparks" the series started on May 7th and will end on June 25th.

Stolen Car Foxhunts

A vehicle tracking system is the latest suggestion aimed at reducing the rising number of car thefts in Australia.

New South Wales police have advertised for companies interest in producing a radio transponder suitable for use in such a system.

The transponder needs to emit a signal which can enable police to pin-point stolen vehicles within a 50 meter radius.

HAMADS

TRADE ADS

RADFAX2: Hi-Res weather fax, morse & RTTY receive program for IBM PC/XT/AT on 36ØK S.25" floppy & full Doc. Need CGA, input port, SSBhf FSK/Tone decoder. Has re-align auto-start view save print. Also "RF2HERC" same as above but for hercules card, and "RF2EGA" for EGA card (64Øx35Ø mode.) Programs are $30 each + $3 postage ONLY from M. Delahunty 42 Villiers Street, New Farm 4ØØ5 Qld. PH. (Ø7) 358 2785.

AMIDON FERROMAGNETIC CORES: For all receiver and transmitter applications. Send large SASE for data and prices to: RJ & US Imports, Box 157, Mortdale NSW 2223. Closed during August. (No enquiries at office please...11 Macken St, Oatley.) Agencies at: Geoff Wood Electronic Components, Lane Cove; Webb Electronics, Albury; Electronic Components, ACT; Truscott Electronics, Vic; Willis Trading Co, WA; Associated TV Service, Hobart.

FOR SALE - ACT

ICOM IC 751 HF Transceiver with built in power supply, high-stability crystal unit, microphone and manual. QTHR or phone Barry (VK1ABR) on (062) 865652. Price negotiable.

FOR SALE - NSW

DEAD CRO HP140A DUAL-TRACE too good to junk, too hard to fix. Yours if you come and get it. Stephen VK2ESG QTHR Ph: (046) 819675

DSE COMMANDER 2M, goes well plus wattmeter, 5/8 whip, gutter and dash mounts - $200 Chris VK2ZCS (046) 571563.

AMATEUR RADIO MAGS. Oct 1977 - Aug 1987 incl. and 11 odd issues from 1959 to 1966 from a deceased estate. I would rather get them a good home than pulp them! $20 the set, and 20¢ ea. for the odd copies + postage. VK2DYP, Frank, QTHR (02) 4525172.

DSE COMMANDER 2M TXVR in good working order $220 Rick VK2KRH (048) 711067 after 5pm. Licensed amateurs only.

13.8V 10A power supply $80: Emtron EAT300 antenna tuner $150; Tokyo Hy-Power HL-2ØU 70cm power amp $200; Jumbo HP-50v 144MHz linear amp. $175; Colrose PBC-III colour bar generator $100; Goodwill GOS955 5MHz CRO c/w Coline probe $225; Tech TE20D RF signal generator 120kHz-500MHz $40; Tech TE22D AF generator 20Hz-200kHz $40; Osker Block SWR200 power meter $100; NLS FM-7 freq counter $100; NLS LM-350 digital multimeter $50; Daiwa PS120M 3-15V 10A power supply $80; Corona HP-80VDX GaAS FET 144MHz linear amp $175; Tokyo HY-Power HL-82V 144MHz 80W linear amp $200; BK Precision Mod 830 auto range capacitance meter $75; BK Precision Mod 2800 digital multimeter $80; Kaise SK9000 EHT probe 45kV $30; Yaesu FP80A 13.8V 4A power supply $50; Trio DM-801 GDO $80; Yaesu FT-77 HF transceiver $600; Yaesu RSM-2 mobile ant base c/w RSE-2A 144MHZ antennas $45; KDK FM-2033 144MHz mobile transceiver $200; Yaesu FRG-7 HF receiver $120; Yaesu FT-208R 144MHz handheld $200; Toyo Meter T-430 144-430MHz watt meter $50; Ramsay CT-70 600 MHZ freq counter $200; BK Precision E-200D 100 kHz-200MHz signal generator $175; BWD 539C 20MHz dual trace CRO c/w Coline probe $500; Tech TE15 TRADIPPER GDO $80; BK Precision 510 transistor tester $30; BK Precision DP50 digital probe $20; Tokyo Hy-Power 45W 70cm amp $200; ICOM IC-4E 70cm handheld c/w spare batt pack. All equipment in gd condition. Deceased Estate VK2LZ Mrs Bischoff (02) 4385791.

YAESU FT101 Txr complete with Manual and Circuit $250. All boards, valves and Fan OK. Requires new Power transformer. Will pack. Freight extra. Lewis VK2LS, QTHR or (065) 820424.

HOW TO JOIN THE WIA

Fill out the following form and send to:

The Membership Secretary
Wireless Institute of Australia
PO Box 300
Caulfield South, Vic 3162

I wish to obtain further information about the WIA.

Mr, Mrs, Miss, Ms: .....

Call Sign (if applicable): .....

Address: .....

.....

State and Postcode: .....

FT290R with extras. 2M 30W linear all $550; new transmitting tubes : RS1016 (New cost $550) - make an offer; QY250 (2X) $50 ea; transistor dipmeter DM4061 0.1÷250MHz also new $80. Andrew (02) 8055463 BH.

KENWOOD TR2500 2M/FM H/H TXVR NICD/ Charg 2/PB25 Recharg batteries SMC-25 SPKR/ MIC Soft/Case Belt/Clip MS-1 Mobile Charger Stand Manuals as new $350 the lot. Manfred (02) 3718854

FOR SALE - VIC

TRANSFORMER 750-0-750 500 mills $40; Dick Smith GP100 Printer $150; Realistic Pro-31 Scanner with Nicads $150. VK3ATK (03) 7988510

ICOM 471A 70cm all mode 30 watt $900 Roger VK3XRS (051) 568291.

ICOM IC2A 2M hand held c/w spare BP3 battery pack, ext MIC/SPKR and handbook EC $220 Steve VK3JY QTHR.

SPEECH synthesiser AEM4505 ASCII code to speech synthesiser for IBM compatible. With sample BASIC software $95 VK3MZ Ringwood (03) 8763643.

MATCHED paid of 572Bs used sparingly over the last year in Yaesu FL2100Z on reduced power. Usage would not have exceeded 200 hours $200 the pair Roth Jones VK3BG (03) 7253550.

COMPONENTS, amplifiers, radio/PA equipment. Cable, tools, assorted hardware, large collection of records (78rpm & LP) (03) 836 7097. Estate late Max Hull VK3ZS.

BOOKS; Some collectors items; ARRL Handbooks 1977, 78, 80; Bound copies QSTs 1939-1954 except 1952; RSGB Handbook 3rd edition; Radio Handbook USA 1975 12th edition, also 13th edition (Editors & Engineers); US Callbook 1984; Basic Television, Bernard Grob 3rd edition 1964; Electronic Calculators, H Edward Roberts 1974; Guide to Mobile Radio, Leo G Sands 1958; How to Use Your VOM/ Multitester or DVM, Louis M Dezettel 1981; Principles of Electricity Illustrated, Roy C Norros 1947; Standards for the Technical Equipment and Operation of Medium Frequency Broadcasting Stations, Aust Broadcasting Control Board 1968; Suppressing Radio and Television Interference, BL Morley 1956. Television Analysing Simplified, Milton S Kiver 1958; Television Interference, Remington Rand Lab of Advanced Research 2 Ed, undated but with reprints of articles published 1946-1953; Television Simplified, Milton S Kiver 1954; Transistors and Crystal Diodes, B R Bettridge 1954; Transistor Manual, Ed JF Cleary GEC 6th Ed 1962; Transistor Projects Vol 1, Forrest M Mims 1977; Transistor Substitution Handbook, Howard W Sams Staff 1972; WIA Book Vol 1, Ed BR Bathols; Wireless World Annual, 1976; Large collection photography books; Estate late Max Hull VK3ZS (03) 8367097.

DAIWA CL-66 Antenna Coupler with manual $175; set of HF antenna handbooks by "CQ", "73" and "ARA" $6; VHF antenna handbook by "73" $3; "Zeppy Vertical" 2 MX antenna with 50 OHM co-ax $15. I Stafford VK3XB (03) 2884686 QTHR.

DECEASED Estate equipment: Kenwood antenna coupler AT230 with manual $200; Daiwa antenna coupler CL-66 with manual $175; set of antenna handbooks (HF) by "73", "CQ", "ARA" $6; Antenna handbook (VHF) by "73" $3. I Stafford VK3XB (03) 2884686.

KENWOOD HF transceiver TS120S with mic and manual good working order $600; mounting bracket $25. Alan VK3ADK (03) 3377332 QTHR.

EMOTATOR 102 Rotator (unused) $100; BC221-AK freq meter $20; AWA AF osc 20Hz-200kHz $40; Sig gen 50 k/50M, 1u-1V $100; RF OSC 140k-24M (HB) $20; tape recorder Truvox 3sp rtr $25; Marconi cct mag meter (Q) VHF $150. Oscilloscope Trio CS - 1560A dual-trace DC - 15 MHz $400. Selsyns (unused) 2 pr $20 ea; power valves - various 6JB6 6LQ6 807 809 813 829 832 SYD.VK3ASC QTHR (059) 711861.

Since there was only one contribution we decided to omit Over To You this issue.

YAESU FRG-7 EC $300; Yaesu FRG-7700 EC $475. AH (052) 481410.

FT 757 GX + Mic + Handbook $1300; 2 MDX antenna 16 elemt Yagi Gain17db $130. Franz VK3DVD (03) 7267137.

ICOM 720A HF all band transceiver + IC-PS15 power supply, mic, batt, charger, instr manuals, circuit layout $1200. VK3EIM (03) 2117219.

DSE Commander 2M FM transceiver in GWO $200. VK3TCH QTHR (053) 317425.

FOR SALE - QLD

ANTENNA tuner HF ex Aircraft remote switching adjustable L&C $35; Marconi Mono Sync Decoder suit ATV $20; Genuine coaxial 4-POS switch, coaxial interior, 75Ω N-connectors supplied $30. VK4AIZ QTHR (07) 3915526.

KENWOOD 2M transverter TV502 with book & leads, pair transistors T20A6 for DC P/S (TS520/ 820). Dennis VK4ADY (075) 652226 New QTH.

YAESU FT-101E transceiver; Yaesu FL-2100B Linear; Kenwood AT-200 tuner; Yaesu FT-7 transceiver: Best offers. Brian VK4ST (071) 445720.

VIC20 $100; Leader GDO $75; set Hustler whips $200; TS520S $475; MC50 mike $50; TS530S $700; Electronic keyer $50. Contact Keith (07) 824 0897.

ICOM 730 solid state all band HF transceiver as new condition in original carton c/w manuals and mike, 240V AC/12V DC 200W PEP SSB, CW and AM modes $950 ono; AWA carphone junior VHF transceiver model MR6A 12V DC c/ w mike, GC $50 ono. John VK4AJH QTHR (07) 262 2076 AH, (07) 2525597 Bus.

FOR SALE - SA

METRONIX PSU adjustable 15V 6.3A $150; B&W heavy duty PI-coupler coil assy (2KW) $150; Murch Electronics UT2000 transmatch-coupler 2KW wide-spaced C's roller coil $350; Frequency counter DC-300 MHz oven-controlled $200; 6146's new $25 ea or $45 pair, used $15 ea. Ian Hunt VK5QX QTHR (08) a2596418 Bus, (08) 2501708 AH.

YAESU mobile antennas for 15m, 10m, and 2m incl gutter mount, all in mint condition, used only a few times $60 ONO. VK5KBE (08) 250 7259.

YAESU FT200 and power supply $200; Yaesu FT707 $750; Realistic AX190 receiver $125. Gary VK5DX (08) 370 9196 AH, (08) 230 6339

Brand New Call

Brand new Novice on the bands
Tapping morse with shaking hands;
First contact is quite a mess
(quickly sending QRS);
SENDING OK, no real trick,
But RECEIVING - must be quick.

"UR sigs are 599,
Name is Bill and WX fine;
QTH is in the book
QSL is OK - look;
QRM is coming fast
Sorry, QSO can't last"

"Rig is homebrew, ant is 'v'
Power out is QRP,
Morse is OK, but you see
More at home on SSB"

"Hope to see you down the log,
Licence new - mind all agog,
So I'll sign, TU for call,
73, CL - that's all!"

From Bill Martin VK2COP

STOLEN EQUIPMENT

YAESU two meter hand held, Serial No. 4E382078; also Yaesu FT708R 70cm hand held, Serial No. 2J181463; both stolen from Enmore on 29 March 1989. Contact owner, Peter Jeremy VK2PJ (02) 5503419, Newtown Police, or your local police.

COMMENTS

Bus.

YAESU FT730R 70cm FM mobile 10W 10 memories $325; 2M Corona Dengyo low noise GaAs FET preamp $50; Kenwood MC355 noise cancelling mic 50K $35; All items unused. VK5XW (08) 317576 QTHR.

KENWOOD TS8205 transceiver and Chirnside Five band vertical antenna. VK5VE QTHR (08) 2586070.

FOR SALE - TAS

YAESU FT101ZD exc cond with full service manual and two spare final tubes $800; also speaker/line unit SP901P $50. Ian VK7JY (003) 272011.

WANTED - NSW

REASONABLY late edition of RSGB radio communication handbook will purchase also book or illustrations of waveforms. David Kidd 8 Gosse Ave Dubbo 2830 (068) 818906.

WANTED - VIC

TH3 MK3 good condition, details and price to Bob QTHR VK3EFD (03) 3742416.

WIRING instructions to modify Siemens Model 100 MK2 for RTTY use, postage expense returned. Vic Lonsdale VK3DND Tambo Crossing Vic 3893.

CIRCUIT and tune up info for AWA RT80 VHF hi band transceiver, appreciate any help, will pay costs. (053) 317425 VK3TCH QTHR.

ICOM IC R70 communications receiver, must be in GC, would also consider Drake R4C. (053) 358083 Daryl VK3VXQ.

WANTED - SA

BUTTERNUT vertical antenna or info and dimensions to build one. Gary VK5DX (08) 3709196 AH, (08) 2307199 Bus.

CIRCUIT, data, calibration chart etc, RAAF TA1010 signal generator (Philips), any info, please help, all costs, photocopy paid by QTHR VK5SJ (08) 295 6751.

WANTED - QLD

DOWKEY coax relay type 77-114 12 volt, two RCA outputs, ex Qld, WIA Ballot mid 1970. VK4JH 28 Macrossan St Townsville Qld (077) 712285.

WANTED - NT

INTELSAT (C-Band) TVRO system, cash or trade ICOM IC-751, w/cash adj. Eddie De Young VK8XX (089) 513138 BH, (089) 527560 AH, Box 912 Alice Springs NT 0871.

ADVERTISER'S INDEX

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HAMADS

Please Note: If you are advertising items For Sale and Wanted please use a separate form for each. Include all details; eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.

*Eight lines free to all WIA members, ninth line for name and address Commercial rates apply for non—members. Please enclosed a mailing label from this magazine with your Hamad.

*Deceased Estates: The full Hamad will appear in AR, even if the ad is not fully radio equipment.

*Copy typed or in block letters to PO Box 300, Caulfield South, Vic 3162, by the deadline as indicated on page 1 of each issue.

*QTHR means address is correct as set out in the WIA current Call Book.

*A courtesy note will be forwarded to acknowledge that the ad has been received.

Ordinary Hamads submitted from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re—sold for merchandising purposes.

Conditions for commercial advertising are as follows: $22.50 for four lines, plus $2.00 per line (or part thereof) Minimum charge — $22.50 pre—payable.

State: .....

❑ Miscellaneous
❑ For Sale
❑ Wanted

Name: .....

Call Sign: .....

Address: .....

.....

OUT NOW

At all good newsagents and book stalls

Electronics Today INTERNATIONAL

JUNE

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ELECTRONICS • TECHNOLOGY
INNOVATION

The Ideas Olympics
Toyota's boffins get creative

March of the Compacts
A look at the latest camera technology

Magellan launches at last
Solar-powered craft to orbit Venus

Projects to build:

- Input/output card
- Audio toolkit

PLUS

eti Sound Insights
AUSTRALIA'S HIGHEST CIRCULATING HI-FI MAGAZINE

Sound Ideas — Sound Advice — Sound Products

More information and 84 pages of colour!

CAN YOU AFFORD NOT TO READ IT!

ICOM'S NEW HF TRANSCEIVER HAS MORE ARROWS THAN ANY OTHER HF TRANSCEIVER.

Frequency synthesis by Direct Digital Synthesizer which provides low noise floor and fast lock up.

Built in controller for automatic antenna tuning. Compatible with AH-3 HF automatic antenna tuner.

Twenty six memory channels. Channels 23 and 24 memorise both receive and transmit frequencies for split operation.

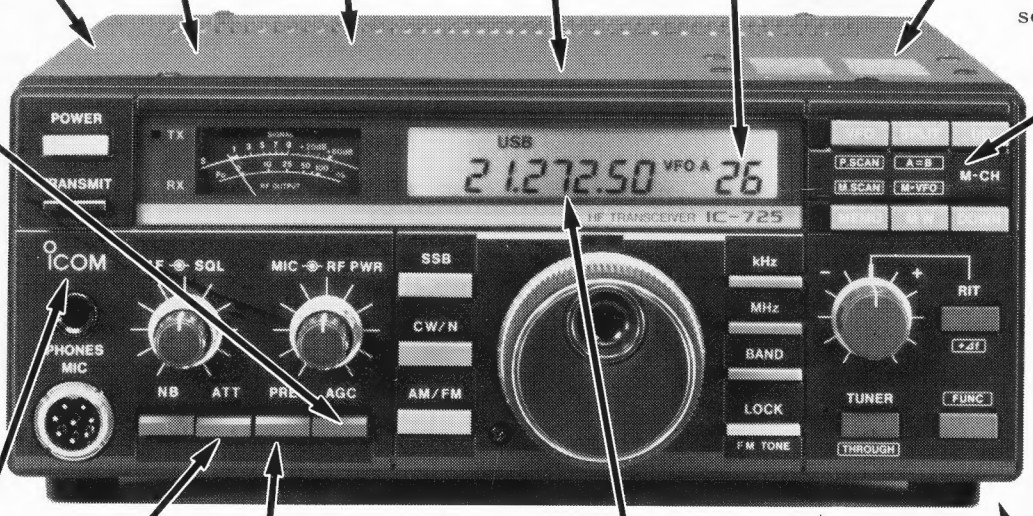
Semi break-in with adjustable delay timing and sidetone for CW operation.

Band stacking register (identical to that of IC-781).

105 dB dynamic range.

Three scans: programmed, memory and selected mode memory.

Automatic gain control (fast/slow).



20 dB receiver attenuator.

Switchable tuning steps, 20Hz, 50Hz, 1KHz and 1MHz.

And one highly advanced feature that no other brand of transceiver will ever have. Call Melbourne on (03) 529 7582 or interstate on (008) 338 915 for your nearest Icom stockist.

10 dB receiver preamplifier.

General coverage receiver 30KHz to 33MHz. (500 KHz to 30 MHz guaranteed.)

Built in CI-V system for computer control (CT-17 required) and transceive function.

100 watts output on USB, LSB and CW transmitting and receiving. 100 watts FM and 40 watts AM with optional unit.

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